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NEWS IN BRIEF**Xerox after Microdata?**

THE mystery suitor for US minicomputer Microdata has still not been unmasked, but UK sources name Xerox and ITT as prime candidates. If Xerox is interested, it will represent an ironic about-turn for the company, which closed down its Xerox Data Systems operations in 1975, and subsequently passed the baton to Honeywell.

Xerox Data Systems manufactured and marketed a highly-regarded minicomputer, the Xerox 530. The growing interest at Xerox in the automated office market makes an in-house minicomputer capability particularly desirable.

WP software

A SOFTWARE package supporting word processing on the IBM System/34 has been developed by Gordon Brownbill Computer Services, of Warrington. The system caters for mixed upper and lower case printing, in conjunction with an IBM-supplied 96-character print belt.

Doctor's authority

TO oversee controls on medical records, a doctor should be included in any Data Protection Authority that is set up, according to a resolution passed at the British Medical Association annual meeting. The doctor should be a clinician in active practice, as distinct from someone working in, say, community medicine, it was agreed, and he should have experience of computers.

German group

GROWING interest in BCPL in the German-speaking lands has led the University of Regensburg Computer Centre to organise a BCPL users meeting in Regensburg, West Germany, for July 12. Given sufficient interest, a German BCPL user group will be formed to complement the similar UK group formed earlier this year (Software File, March 15).

Honeywell denies pull-out from CII-HB

FIRMLY squashing growing speculation in Paris that moves are afoot to increase the French shareholding in CII-Honeywell Bull, Honeywell says its stake in the jointly-owned company is not for sale.

"Honeywell considers its 47% ownership of CII-HB an excellent investment and has no intention of reducing its share," a spokesman at corporate headquarters in Minneapolis told Computer Weekly.

Speculation has arisen because industrial conglomerate St Gobain Pont-à-Mousson is actively seeking a stake in CII-HB, either directly or through Compagnie des Machines Bull, the French company which holds 53% of the shares in CII-HB.

Since Honeywell has firmly ruled out the

first option, adding that it is not in any way involved in the St Gobain negotiations, all that is possible is a restructuring of the existing shareholdings in CMB.

The total 60% is held by the public at large — and St Gobain could try to acquire some of these. Another 20% is held by the French state directly, and is almost certainly not for sale. The remaining 20% is held by another holding company, Opagip, in which the big French electrical and electronic combine CGE has 51% of the shares while a consortium of banks holds the remainder.

There has been speculation that CGE

is now prepared to sell its stake to St Gobain. Although CGE is understood to be

dissatisfied with the direction CII-HB has been taking, this seems unlikely.

Since the merger between CII and Honeywell Bull in 1976, CII-HB has succeeded in turning itself into a very broad-based company with an identity distinct from that of Honeywell. Major decisions taken in France include the acquisition of 80% of microcomputer pioneer R2E, the establishment of a joint company with systems house SESA for the implementation of complex large-scale computer projects, and a decision to seek acquisitions in the office automation field.

A broader spread of Honeywell computers is now manufactured or assembled in France than in any other country, including the US.

Lloyds pay out huge sums on leasing policies

UNDERWRITERS at Lloyds of London are having to pay out considerable sums as a result of claims under the controversial "J" policies written for third party lessors of IBM equipment in the US, although the corporation said that no firm of underwriters would be faced with an "individual claim of any great magnitude".

Lloyds pointed out that about half of all the equipment covered by the "J" policies was peripheral equipment, as opposed to CPUs. The total original value of all the equipment involved was about \$2,000 million and the total sum insured came to about \$1,000 million.

Earlier this year Lloyds estimated that the claims under these policies would total about \$200 million, but industry sources have said it could be considerably more. The biggest user of the policies, Intel, is understood to have claims of more than \$100 million outstanding.

Asked about the role of the First National Bank of Boston with which Lloyds is now working in the US, Lloyds said that the bank's role was simply that of an administrator, facilitating the payment of claims. The bank pays the individual claims on the many items involved to the lessors on a monthly basis and is reimbursed in a lump sum each quarter by Lloyds.

The claims started to come in 1977, three years after Lloyds started writing the policies, and fresh claims will continue to be made until the end of this year (CW, December 8, 1977), three years after the last policies were issued.

Lloyds said this arrangement removed the necessity for every underwriter in London to be consulted before any claim was paid in the US.

The group's representative to the British Medical Association annual meeting, Dr Alan Woods, managing director of Digitus, "We all think Apple is a tremendous product and we all want to continue dealing, but we want to know we have sources of supply," he said.

Payments to lessors who have

had their claims accepted by Lloyds are made on a monthly basis and they make up the difference between what the leasing company is actually receiving in rental payments from second lease on the machine and the sum insured on the "J" policy.

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There are 17 third party lessors with "J" policies in the US, and Lloyds said the claims were being borne by 60 firms of underwriters and several other insurance companies.

The claims started to come in 1977, three years after Lloyds started writing the policies, and fresh claims will continue to be made until the end of this year (CW, December 8, 1977), three years after the last policies were issued.

Lloyds stressed that the Bos-

ton bank was not organising any

massive sell-off of the insured

machines and neither was any

broker or group of brokers. The

re-marketing of the machines

was entirely in the hands of the

lessors who hold "J" policies.

The group, formed partly in

response to the appointment of

Data Efficiency of Hemel Hem-

stead as master distributor for

the country (CW, June 28), held

its inaugural meeting last week.

The group's representative to

Cupertino will be Alan Woods,

managing director of Digitus.

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dous product and we all want to

continue dealing, but we want to

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Of the position of Apple's first

UK distributor, Personal Com-

puters, Woods said that he did

not believe Apple would dump it

as a distributor. "If it does, then

we want to know who is going to

be dumped next."

Data Efficiency circulated all

existing and potential Apple

dealers last week with a state-

ment of the new distributor

position in the UK.

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Meditation en masse

YOU will have heard of Cottage Industry Computing, but how about Stately Home Industry Computing? The other day I went out to Mentmore Towers in Buckinghamshire, the magnificent Victorian pile built by the Rothschilds and recently bought by the Maharishi Mahesh Yogi and his crowd, for transcendental meditation for the purpose of.

The house is now inhabited



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For disbelievers

MY colleague Martin Banks, recently returned from the IMMM show in Geneva, tells me there was consternation among visitors who were hoping to catch a glimpse of the wares of one of the firms listed in the catalogue, Patrick Computer Systems of Winnipeg, Canada. They went round to the stand, number 632 in the Palais des Expositions, only to find it completely bare.

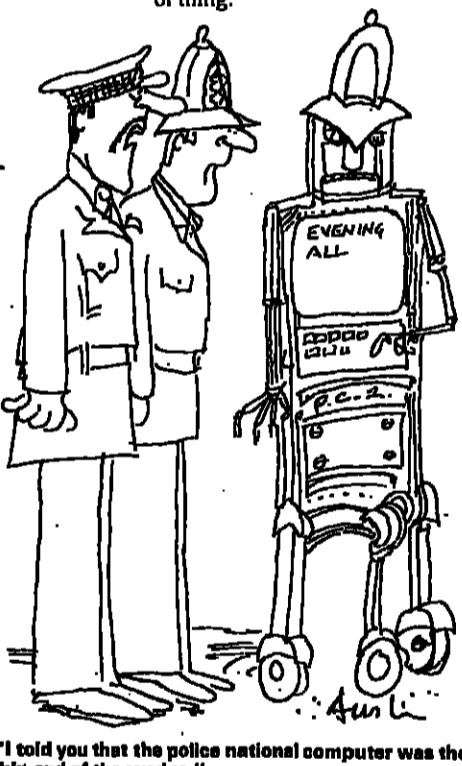
Martin assumed that the firm had just not turned up. I pointed out to him, though, that Patrick Computer Systems' star product is a small business machine called Leprechaun.

Now, everybody knows that just because you can't see a Leprechaun, doesn't mean it isn't there. I can assure disappointed visitors that Patrick and his pals were eagerly waiting for your custom, and if only you had put your trust in them and their little green machine you could be arriving at your office in the morning to find all your sales ledgers and invoices neatly done for you. Shame on you for not believing.

Hardware—Disney-style

I USED to think that we computer people had our bizarre terminology largely to ourselves, so I was a little miffed to discover that in the US the amusement park business—Disneyland, Magic Mountain, Knott's Berry Farm and so forth—hardware is things like roller coasters.

They have their own software too. Turns out that software is variable entertainment—drum majorettes, black-face minstrel shows, whey-faced folk groups etc.



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Disc drive challenge for IBM H-series

AN alternative to the high capacity disc drive, code-named "Whitney", that IBM is expected to introduce with the projected H-series of large scale systems, is being developed by Storage Technology, according to the company's chairman, Jesse Aweida. Storage is also bringing out a disc subsystem for 4300 machines.

It turns out that if you get enough meditators all together in one place—a sort of critical mass of mediators—peace descends on the community and all terrorists, guerrillas, and oppressors lay down their arms. Harmony, creativity, and happiness reign. Hence the Age of Enlightenment.

Aweida said that the high capacity of the "Whitney" drive would be achieved by a dramatic increase in linear recording density to at least 12,000 bpi, twice the existing maximum.

But the number of tracks per inch was expected to be only 750, actually less than the track density on Storage's 8650 drive which records at 957 bpi. The 8650 stores 632 Megabytes on each spindle.

Aweida pointed out that Storage's 3880 compatible system would essentially be a by-product of the company's deve-



lopment of a "Whitney" alternative, but he saw a growing market for Storage Technology among so-called medium-scale IBM system users now that the power of such systems was so much greater. Traditionally Storage has tended to concentrate on users of big systems.

A relative late comer to the plug-compatible disc drive market, Storage Technology claims to now have about 70% of the total business worldwide for drives that are software compatible with the IBM 3350. The company now has marketing subsidiaries in most parts of Western Europe.

● The 3880 can now be attached to IBM 370 and 303X machines but it will only support the older 3340 and 3344 drives on those systems, not the 3370. So the 3175 Megabyte per spindle 3350 is still the biggest IBM built drive that can be used with IBM's large scale systems. On 4300 systems the 3880 will support the 3340, 3344 and 3370.

Back-end database launch

THE back-end "database" system, VSS, being developed by Storage Technology for IBM users (CW, March 22) will be formally launched later this year according to the company.

Storage Technology is developing its own IBM compatible 32-bit processor for VSS which will use magnetic tape type addressing to access data from

(CW, November 2, 1978).

Hobby club hears of S-100 multiprocessing capability

THE standardised version of the S-100 personal computer bus to be published shortly by the Institute of Electrical and Electronic Engineers in the US (Micro News, July 5) will have 24 address lines, 16 bi-directional data lines and enable 16 processors or direct memory access devices to contend for the bus by having their priority levels decoded on to four bus lines.

A simple interface, called Microbus, will enable any type of device to attach to the bus in a standard way via a single cheap dedicated ULA, uncommitted logic array, which will contain a fuse array to protect the bus from overloading.

A crossover multiplexer is also

specified that enables both 8-bit and 16-bit processors to access the same memory blocks. This passes 16 bits across in parallel as well as multiplexing the low order byte on to the high order byte lines, which is catered for in the control signal timing and is derived from a single phase bus clock.

The S-100 specification was

part of the full programme arranged for the last meeting before the summer break of the North London Hobby Computer Club held last week. It was presented by Kells Elmquist, chief design engineer for Itaca Audio in the US and a member of the IEEE S-100 standardisation committee.

He also told the 100 club members present that a further committee had been set up to consider future bus structures, to cater for 32-bit and larger processors, directly accessing more than the 16Mbytes addressed on the current specification, and catering for multiprocessing with more than 16 devices. This would probably involve multiplexing signals on its next season.

Finally a Lesney remote control car was shown which uses two Texas Instruments 1000 4-bit processors to implement the nine commands that can be transmitted from the keypad to the car by infrared radiation.

The car costs £23—and there are 141 shopping days until Christmas.

● Plans were announced for next season starting at the end of September, when the car will become a class, with courses for business users and students as well as software writing using the Polytechnic of Central London's DEC system. The car and other machines for similar lines of business on the Polytechnic's main site will be made available to students at reduced rates.

NCC's commercial business up 35%

AN increase of 35% in business with the general computing community, as opposed to the government, is one of the more significant aspects of the first annual report from the National Computing Centre since it changed its constitution last year. The report covers the 1978/79 year which ended on March 31.

The NCC's income in the form of development contracts from the government's Computers, Systems and Electronics Requirements Board was just over £1 million in 1978/79, almost the same as in 1977/78, but as a proportion of total income it fell from 37% to 30%.

In contrast to this lack of growth, income from other areas jumped from £14 million to £2 million. Income from training services increased from £600,000 to £700,000, while sales of software products leapt from just over £400,000 to nearly £700,000.

The operating surplus chalked up before corporation tax in 1978/79 came to £259,000 compared with £216,000 the year before, although the surplus after tax was less—£82,000 compared with £116,000 in 1977/78. The Inland Revenue adjusted the tax upwards to £177,153 in 1978/79 because the £100,000 paid in 1977/78 was a

lot less than the 52% of operating surplus that should have been paid.

The NCC's change from a grant-aided organisation to independence was completed last year. Its governing body changed from a council to an industrial type board of directors.

SEEN here with the contract that will take a range of DEC-based small business systems from Plessey Peripheral Systems on to the high streets are Mike Brailind (left), general manager of the Plessey division, and Bill Cannings, managing director of the Byte Shop chain of retail outlets which

has now entered the sampling stage with customers, and is expected to find considerable application in both industrial control and small business equipment.

Based on a 6809 processor itself, the Exerset incorporates a large video display, dual mini-floppy disc drives, and has a semi-compiled Basic, held in ROM in the system. In the US it is expected to cost about \$4,500.

Motorola stresses that it will only be marketing the Exerset as a development system.

Computers and electronics growth at GEC and Plessey

Plessey's 7.9% profit improvement at £48.2 million was made on a growth in turnover of 6.1% to £648.3 million, and would have been £2 million higher but for the rise in the value of sterling against the currencies of most of the overseas countries where Plessey trades.

Profit figures were also hit by two troublesome operations. The Garrard record changer business lost £2.8 million, and the Stronger Exchange factory at Edge Hill, Liverpool, lost £8 million.

As a result, the £7.5 million profit made on the £33.5 million

sale of Plessey's 24.42% stake in ICL was more than wiped out.

Growth in Plessey's computer-related activities, categorised as office, data and control systems, was dramatic profits rose 16% to £9.6 million, 20.3% of the total, on turnover up 6.7% to £2,500 million. The Electronics, Automation and Telecommunications group was a star performer, with profits up over 33% to £101.2 million, on turnover up 28% to £862 million. This division is more than twice as big as the next largest, and the figures include sales to other GEC companies.

First 4300 benchmark figures

THE first set of benchmark figures for IBM's new 4300 series compiled from IBM publications, have been published by Advanced Computer Techniques Corp.

A statement issued by IBM on the Memorex complaint to the EEC Commission says: "As we have not been informed by the Commission of the details of the complaint, we cannot comment on specific allegations."

Most striking finding is that the Extended Control Program Support microcode enhancements on the 4341 can reduce supervisor time more than 80% compared with the 4330. The 4341 is a star performer, with profits up over 33% to £101.2 million, on turnover up 28% to £862 million. This division is more than twice as big as the next largest, and the figures include sales to other GEC companies.

ALTHOUGH the figures for the second quarter due from Memorex reflect a dramatic decline in profits, the setback is unlikely to do the company any serious damage, and the fall in the share price from a 1979 peak of \$71 to the mid-\$20s is almost certainly

the same issue raised by Memorex in its unsuccessful litigation in the US.

"We, therefore, consider the allegations as reported unfounded and without merit."

IBM scored a further success in the US late last month when another anti-trust opponent, Calcomp, lost its appeal against a directed verdict, brought in two years ago, that there was no case for IBM to answer (CW, February 17, 1977).

● In another issue involving the EEC Commission, IBM is insisting that it would be violating the Treaty of Rome if it revealed its prices to third party lessors of IBM equipment. These articles are concerned with anti-competitive collusion between companies, in particular with

Intel.

The better performance on scientific applications is not surprising in the case of the 4331, since commercial jobs tend to be much more input-output-bound, and on the 4341, input-output activity is handled by integrated channel adaptors which steal processor cycles.

The full report is available from ACT at 437, Madison Avenue, New York 10022, US.

Maintenance deals

ICL System 4/70 and 4/72 systems at the Universities of Cardiff and Exeter are the subjects of maintenance contracts won by the independent maintenance company Data Processing Customer Engineering, DPCE. DPCE says that it is now holding discussions with a number of other important System 4 users.

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Northampton (0804) 49125, and ask for a demonstration.

The setback was fully anti-

cipated by the company. Asked about the cash reserves Amdahl was building 18 months ago, Dr Gene Amdahl told Computer Weekly, "We are offering leases, and not many have been taken yet, but if that changed, the cash position would alter very quickly."

Intel's problems in the plug-

compatible market are much more severe than Amdahl's, since Intel has been hit by a decline in demand for its AS machines, whereas there has so far been no slackening in demand for Amdahl's 470V line.

Cost estimates described as conservative, dealing with staff and equipment charges, overheads, cash flow, and so forth, led O&M staff to reach the figure of a three-year payback.

The workload for the trials, which were held in the Society's head office in Leeds, consisted partly of non-offices letters and memos and partly of documents constructed from standard paragraphs. Gains ranging from "worthwhile" to "substantial" were obtained with both sorts of work.

Cost estimates described as conservative, dealing with staff and equipment charges, overheads, cash flow, and so forth, led O&M staff to reach the figure of a three-year payback.

The reason that profits will be

hit is that 40% of customers are

not starting to generate profits until

well into the leasing term.

However leased machines are

a valuable asset to Amdahl, and if the company began to run short of cash, it could raise money by selling an interest in its lease base. So far it has not done so, because the prevailing high interest rates in the US would make it unattractive. It could well change its mind if, as expected, interest rates begin to fall later in the year.

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MICHIE'S PRIVATEVIEW

Robots, hermits and harlots

OUR new Ambassador to Washington, Sir Nicholas Henderson, has lamented the continuing industrial decline of Britain. Other voices warn of our role as Europe's new pauperism, and have commented on lack of national fire and will.

BBC Horizon's recent "The Robots are Coming" jolted us anew with statistics of programmable robots pouring into Japanese and American manufacturing industry, and to a lesser extent into the factories of our European competitors. Some 4,000 Japanese robots are already at work, largely in the car industry; in British Leyland, only a handful have been purchased and these are for technical assessment only. None are doing actual jobs.

The screen showed Engelberger, the busy-in founder of the world's largest producer of robots, Unimation Corp. He smiled in rueful sympathy at our parous state.

Why are industrial robots not being introduced here? His answer was one-sided but con-

vincing. He blamed managerial timidity. As for the trade unions, he had seen little signs of significant opposition from that quarter. Further, British management was so scared to mention such topics to the work-force that they were not in a position to know what the shop-floor attitude might be.

Of course there has to be a net reduction of working hours. But how welcome, said an ASTMS spokesman on the same programme, if that could be managed in such a way that we spend less time doing what we have to do and more time doing what we want to do!

Some years ago a former Lord Provost was so moved by this thought that in his retirement speech he mis-spoke himself to

immortal effect.

"I'll be away now to the far highlands," he informed the solemnly assembled company "where I plan to live the life of a hermit."

Historians of the occasion now believe that the intended word was "hermit." Yet as Freud was the first to emphasise, these slips can reveal hidden attitudes. Doubtless in a Scottish Lord Provost's secret mind, doing quietly what one wants to do is not filed, as it would be in the mind of a Catholic or a Buddhist, under "RETREAT, SAINTLY" — but rather under "IDLENESS" — with all the degeneracies and deprivations into which that devilish state may plunge even the best Presbyterian!

Truly, there are many breeds of men. But many more are the mythologies which they cherish about each other. The following is from a book to be found in school-rooms: "They are lazy individuals, apparently devoid of morals, and always prepared to lie, cheat and steal."

Whose conversation are we overhearing? Perhaps it is a data processing manager letting his hair down about maintenance staff. Or is it a board member at Dagenham grousing about the work-force? Yet it could just as plausibly be one of the shop stewards on the subject of the

board! Maybe it was overheard in the Athenaeum, and the target was the new Ministers of the Crown? And yet it sounds not unlike the late Richard Crossman writing about senior civil servants. Or in the groves of Academe: "Tell me, young person, what are the Professors like round here?" Or "You were styling, Dunn, about the students..."

Let me reveal that the statement is from a New South Wales textbook. It refers to the Australian Aborigines. Textbooks are purportedly sources of knowledge. This circumstance starts in my mind a train of uneasy thought.

A more dynamic knowledge-source than any textbook is arising in the form of computer-based "expert systems," of which SRI International's PROSPECTOR is an impressive example. One of PROSPECTOR's areas of expertise is the geology of uranium. As it happens, political tension exists around the discovery of uranium deposits lying beneath the Aborigine's traditional habitats.

PROSPECTOR's knowledge, of course, does not at present extend to non-geological factors which might affect decisions to drill. But for Son of PROSPECTOR or Grandson of PROSPECTOR



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Puzzler

ON the occasion of his daughter's marriage, a sporting squire gives the happy couple a plot of land, to be selected by them from his vast estates. To test their business acumen, he specifies that the plot be bordered by four straight sides with respective lengths of 1, 3, 6 and 8 furlongs and that they them-

selves should decide exactly what shape it is to be.

How should the newly-weds plan their boundaries, in order to maximise the area of the plot? What shape is best, and how many square furlongs will then be enclosed? Does the order of the sides matter?

See page 48 for solution.

SOFTWARE FILE

Pre-release specs wanted from IBM

Hours to market Sort-1 enhancement

An enhanced version of the OMIS Sort-1 package for DEC PDP-11 users running under RTSS/E is being marketed by Hours Computing. Called OMIS Sort-1-Plus, the software runs in 18K words and is priced at \$475.

Features of the package include the ability to sort up to 15 million records, each up to 512 bytes long, with as many as 15 specified sort keys. Key fields may be alphanumeric, integer, decimal, or single or double precision floating point.

Participating companies would be required to pay the standard monthly licence fee for the program product, receiving everything apart from the program itself.

The delays, which mean that early DOS/VSE sites are at the moment unable to use proprietary products interfaced intimately to DOS/VSE, are naturally aggravating to both suppliers and users.

Companies could subsequently return the documentation, having paid licence fees only for the months for which they held it.

Currently, the information exchange programme only gives to software houses information that is already freely available to IBM users.

Combined with the lack of full functional specifications for many DOS/VSE components, this has led to a general uncertainty in the market, with potential purchasers reported by some to be holding back.

Johnson to sell OS prod control system

A HIGHLY regarded production control system for IBM OS installations is to be marketed in this country by the newly-formed UK subsidiary of Johnson Systems (Software File, July 5).

The best-known products in this area are probably the Value systems marketed in this country by RTZ Computer Services.

A Johnson spokesman noted, however, that these were typically more ambitious than Apex, in that they aimed to load a machine according to a timed job schedule.

Last week's story on Johnson's other main products, Jars (Software File, July 5) erroneously reported that Computer Associates had acquired Datachron, the developer of the principal competitor to Jars, Jasper. CA has acquired only Jasper, and is currently handling marketing and first-line technical support. Responsibility for second-line technical support and enhancement will be transferred to CA at the end of a hand-over period.

tions departments by automating such aspects as the submission of JCL and the initiation of dependent processing steps.

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A Johnson spokesman noted, however, that these were typically more ambitious than Apex, in that they aimed to load a machine according to a timed job schedule.

Last week's story on Johnson's other main products, Jars (Software File, July 5) erroneously reported that Computer Associates had acquired Datachron, the developer of the principal competitor to Jars, Jasper. CA has acquired only Jasper, and is currently handling marketing and first-line technical support. Responsibility for second-line technical support and enhancement will be transferred to CA at the end of a hand-over period.

STILL smarting over the lack of pre-release information on DOS/VSE, which has until now prevented them from updating system software packages for use with the new operating system, software houses are optimistic that the problem will be alleviated in future via an extension to the Software Information Exchange Program launched late last year (Software File, January 11).

Participating companies would be required to pay the standard monthly licence fee for the program product, receiving everything apart from the program itself.

The proposals, to which IBM is understood to have agreed in principle and which are supported by Adapso in the US and by the CSA in the UK, call for IBM to provide more advance information on future software products.

What is envisaged is that software houses should be able to obtain full documentation on programs that have gone to alpha or beta sites, gaining a lead of perhaps one to three months before the software is fully released.

In the case of DOS/VSE, this has meant that companies are only now receiving the detailed specifications they need to implement native mode versions of their products on the 4300.

The delays, which mean that early DOS/VSE sites are at the moment unable to use proprietary products interfaced intimately to DOS/VSE, are naturally aggravating to both suppliers and users.

Combined with the lack of full functional specifications for many DOS/VSE components, this has led to a general uncertainty in the market, with potential purchasers reported by some to be holding back.

ECHOING DEC's release to end-users of its VAX-11/780 system implementation language, BISS-32, Hewlett-Packard has made available its equivalent facility on the HP3000, called SL/300.

Like BLISS, SL/300 is a high level, block structured language intended to give much the same efficiency and control as assembly. It is the language in which all the HP3000 operating system is written, including compilers and file and database management subsystems.

In support of its use for writing system software, it includes such features as dynamic array allocation; recursive and re-entrant procedures; bit-level manipulation; and task synchronisation. It also supports a full range of

data types; an extensive file system; and unlimited statement nesting.

HP anticipates that SL/300 will be used chiefly by programming specialists for tailoring application systems and by third-party program suppliers, such as OEMs.

Indications that the MMS general ledger and financial reporting system was being adapted for use on minicomputers (Software File, April 20, 1978) have been followed by the release of a version for the HP3000. Written in Cobol, rather than in the HP3000 implementation language SL/300, the software is marketed in this country by Package Programs and joins existing versions for the IBM System 3, ICL 2903, and IBM and ICL mainframes.

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"This is intrinsic to a program," he noted, "and it means that software can never be perfect. You can never keep up in your software with the changes that are occurring in the real world."

"Besides, the very introduction of a computer system changes the world that its component programs are supposed to be modelling. So it's inevitable that will be immediately out of date."

"In the context of banking, for example, customers are restricted to conducting transactions between 9.30 and 3.30. However, if you introduce automated equipment, the

pattern of bank use will undoubtedly change, possibly in ways very hard to predict."

"A system designed to handle current workload patterns could for instance turn out to be both over-equipped and unsuitable when customers adapt to the new freedoms."

"Another way of putting it is that the statement of requirements for a system will probably be out of date as soon as it's implemented — if not before. Yet requirement documents are hardly ever updated once a system has gone live."

"One lesson that Lehman draws from all this is one of the most important properties of a program."

"Structure has no value in itself," he says, "except in so far as it improves changeability. Unfortunately, while it is clear that to invest in changeability is worthwhile, just how one set about it is still a research question."

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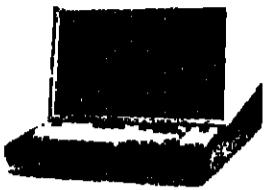
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NEWBURY

SMART
MICRO-BASED
VISUAL DISPLAY
TERMINALS



Model 7007-7008

* British design and manufacturer

* Based on 8080A Microprocessor

* Two-page Memory 3,840 characters

* 24 Displayed line of 80 characters per line

* Switchable Transmission Speeds from 60 Baud to 19,200 Baud

* Split Speed Transmission Mode

* Dual Interface - CCITT V24 and 20/60 mA Current Loop

* Hard Copy Printer Output

* Programmed Host Format - Blink Background or Half Brightness

* XY Cursor Address (and now)

* Roll or Page Mode

* Video Output for External Monitors

* Full Character Editing Features

* Block Transmission from Screen by Line or Page

* Green Phosphor Non-glare screen



Models 7001-7002

* 24 Lines of 80 characters per line

* Selectable Baud Rates from 50 to 19,200 Baud

* Dual Interface - CCITT V24 and 20/60 mA Current Loop

* Teletype Compatible

* Hard Copy Printer Output

* Selectable Half or Full Duplex

* Video Output for External Monitors

* Green Phosphor Non-glare screen

Ex-TOPS students seek work

THE IBM OS Modify command is used by the operator to alter the function of system reader, writer and initiator procedures.

It is useful in that it sometimes saves the operator from having to stop and start procedures. The format of Modify varies in accordance with each procedure.

In relation to readers, Modify may be used to command the card reader to place jobs on the hold queue. The command format is as follows:

F RDRI,TYPRUN=HOLD

This can be useful to operator and programmer alike at sites where an open shop form of job testing is employed (Op Spot, April 12). At such installations the programmers have access to a card reader, enabling them to feed their own work to the system.

According to Jacobs, operators should bear in mind that chief operators, managers and the like have experience of working shifts in the computer room environment.

It must be remembered that the equipment we used was, in most cases, similar to that in use today. Even with the advent of new technology, the underlying principles of operation have not changed dramatically.

Looking back on his time as an operator, Jacobs recalls that staff were genuinely interested

'Contract staff should not try to run the computer room'

IF the operations department is to provide the best possible service, it must take into account user requirements — which vary considerably from one company to the next.

As a result, sites which are similar in terms of hardware and software often differ considerably as regards their applications procedures.

This is why the suggestions of contract staff are seldom taken up, according to Barry Johnson, operations manager at Univac's West London benchmark centre.

Responding to comments made by contract staff at a meeting over their drive and approach — you can't expect them to take the same interest as permanent staff," he said.

But, speaking as an operations manager, Johnson pointed out that contractors don't always have the right attitude towards the work:

"There must be a question mark over their drive and approach — you can't expect them to take the same interest as permanent staff," he said.

His installation does not employ contract staff because of the 'confidential nature' of the work carried out there, he added.

"Procedures vary so much from one site to the next. So the shift leader often can't apply what the contractor puts forward, even if he wants to."

According to Johnson, contractors should use the work as a means of broadening their experience of the industry, and then look to enter operations management.

"Rather than trying to tell shift leaders how to run the

deal with it. To that end, he might enter:

F 00ECLASS = TXYZ

After this command has been carried out by the system, printer 00E will serve output classes T, X, Y and Z, in that order.

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But to those who haven't, he says: "I would suggest that the few who suffer from the five-to-five syndrome should carefully re-examine their choice of career."



Barry Johnson

Make sure resources aren't wasted under IBM OS, with Modify

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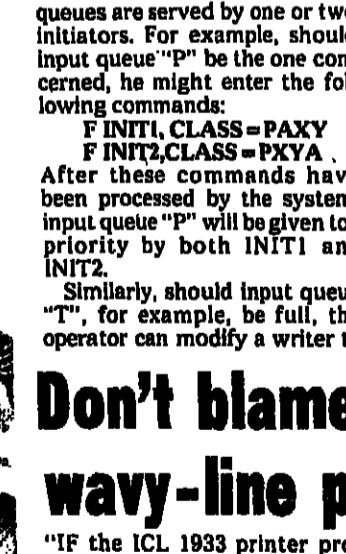
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Derek Pinnock

Don't blame the op for wavy-line printing

and then all the Cs, and so on. You find that the paper has moved slightly between each character, resulting in wavy-line print.

Thus Ron Linton, computer operations controller at Manchester Polytechnic, replies to comments from Gerry Mills, managing director of computer bureau Mills Associates (Op Spot, June 7).

Says Linton, "We have both an ICL 1933 and a 1932, and as far as I can remember, we have always had trouble getting good print quality from them."

The wavy-line print listings sometimes produced by the units is due to the manner in which they work, he says.

Called the International Management Forum, it is aimed at the operations manager, and meetings are to be held in London on October 17-18, November 14-15 and December 17-18.

"They are electro-mechanical barrel printers which print all the As in a line, then all the Bs

OP SPOT

By Bernard Allen

HINT OF THE WEEK

For those who can't hear the telephone

WHEN the card readers are going full out and two or three printers are clattering away, the computer room is a very noisy environment. This causes problems for the operators when they are dealing with the sound level from job control terminals.

To ease matters, use telephone which have a facility for adjusting volume, suggests Mike Lane, a shift leader at Queen Elizabeth Hospital in Edgbaston, Birmingham.

He writes, "If noise is a problem at your site, get the Post Office to install telephones which are normally supplied to the hard of hearing."

"Fitted to the earphone is a knob which enables you to adjust the sound level. This often makes it easier to understand what the person on the other end of the line is saying."

By the way, the Post Office charges £5 for installing these telephones, and the rental charge is 40p above the standard quarterly rate.

the contractors at the meeting said — 'I'm only in it for the money'. It's a fact of life."

Johnson worked with contractors during his days as an operator at Shell Mex in Wythenshawe, Manchester.

"I always got on quite well with them and have no qualms about their ability. In fact, in some cases they are better than permanent staff."

But, speaking as an operations manager, Johnson pointed out that contractors don't always have the right attitude towards the work:

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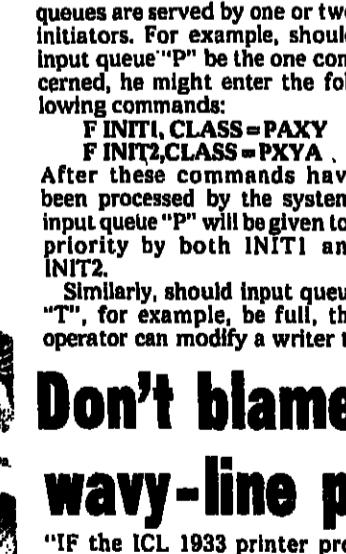
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LETTERS TO THE EDITOR

'France and UK becoming the laughing stock of videotex world'

YOUR story "French pull the plug on Prestel" (CW, June 28), illustrates all too well the dangers of a narrow and parochial attitude towards videotex development.

The UK has a lot to offer. Prestel is still the most advanced system, in terms of the volume of information available and the range of applications covered.

The lessons learned during the build-up to a public service in Britain are utterly invaluable.

The French system also has a lot to offer, particularly for an accented and subscripted language.

Trials are also being conducted in most European countries, Canada, Hong Kong and Japan. In terms of hardware and software, France and Britain are responding to the big opportunity that these videotex markets are opening up. My own

company has sold its videotex research findings? By devising a joint standard, and selling it to the rest of the world? By mounting joint Anglo-French sales missions to sell the concept of videotex first, and specific products later?

No; they respond by, at best, ignoring and, at worst, de-nigrating each other's product.

Thus they damage the concept of videotex and reduce the market potential as a whole. Both countries are to blame and examples could be quoted against both.

There is a task here that requires ministerial action. Let Sir Keith Joseph and M. Norbert

Segard issue a top-level non-aggression directive. Let Britain and France get down to serious joint work to develop the global market, rather than indulge in mutual recrimination and abuse.

The present situation brings relief only to the Americans and Japanese, who will benefit if the European suppliers falter — and will be launched by Honeywell in the US, and Italy when the need arises.

The new products give considerably more substance to CII-HB's communications architecture, and in recognition of this, the company has added yet another acronym, Distributed Systems Architecture, DSA, which becomes the central element of the Honeywell networking philosophy, which is called Distributive Systems Environment, DSE.

The announcement comprises counterparts for two key processors in IBM's Systems Network Architecture portfolio.

The Datnet 7100 is a Level 6-based communications processor designed to perform the same kinds of functions as

CII-HB launches new comms products based on Level 6 mini

WITH an eye to the needs of users of public data networks, notably Transpac in France and the Nordic Datnet in Scandinavia, CII-Honeywell has launched new communications products based on the Level 6 minicomputer.

The Level 6/DSS, Distributed Systems Satellite, is a terminal controller capable of handling substantial autonomous local processing, making it a direct counterpart of IBM's 8100.

The Level 6/DSS allows terminal users to perform file transfers, execute transactions with database access and remote batch processing on the host mainframe or mainframes.

As with the newly-enhanced IBM SNA, (Software File, June 28) and Univac's Distributed Communications Architecture, DCA, which features the powerful DCP-40 communications processor (CW, June 14) the CII-HB DSA allows users to construct almost any shape of network.

The announcements from these three manufacturers underline the lack of any comparable offering from ICL.

PO's £1.5m microwave boost

GROWTH of telephone and data traffic throughout the UK trunk network, currently running at over 10% a year, is to be catered for by additions to the Post Office microwave network.

The microwave network also carries television signals for regional retransmission, for which it was originally set up in the 1950s.

Customers suggesting have been incorporated in HPAC's latest version of their CORAL FG Compiler which they have brought into line with the latest logic definition. The compiler, which runs on SI and PDP11 computers, has a basic price of £12,000 but it is free update for existing customers.

Ferranti will supply a computer control system in its Rainier Series 200. The system written in

PEOPLE AND EVENTS

Golden day for Kathy

PICTURED outside Buckingham Palace is Kathy Butler, secretary to the product division manager of Redifon Computers, after receiving her Gold Award certificate from the Duke of Edinburgh. The occasion was the second memorable event for Kathy, who had also attended a special tea given by the Duchess of Norfolk at Arundel Park, where she received her Gold Award brooch.

The award, in the Duke of Edinburgh Award scheme, was given to Kathy for her participation in projects which included working at a national children's home, Crawley hospital and working with epileptic girls whom she took on holiday to Littlehampton. Kathy has since worked with these children independently.

SSI announces key jobs

SSI International, formed this year by Lowdew-Ajex Computer Service and Social Systems Inc., has announced the appointment of three key personnel. The company was formed to market Simplan, the corporate planning and modelling system in Europe, the Middle East and Africa.

Lionel Woodcock has been appointed managing director of the company. He has been director of marketing for Lowdew-Ajex Computer Service since 1977, and before that was head of management services in Europe for Mux Factor and

Retail director

NI-WLY appointed divisional director of the retail systems division of NCR is Bill Hawley, who was formerly manager of systems services, support division. He succeeds Jack Poole, who has taken up an appointment as director of retail systems for the Middle East and Africa.



Comshare board appointments

THE UK computer services company, Comshare, has announced the appointment of two deputy managing directors and nine new directors to the board.

Alex Jones, technical director, and Roy Poulton, sales director, have been appointed deputy managing directors.

The nine directors include Nie Birtles and Steve Millward. Birtles was previously a divisional director in charge of finance and banking. With his promotion he has moved to sales in the South. Millward has been made director of marketing; he was formerly a divisional director for the Central region.

The other new directors are John Cutting, Howard Garelick, Dian O'Leary, Brian Robson, Keith Talbot, John Taylor and Mike Trott. All of the newly appointed board members have been with Comshare since the company's early days and its European inauguration in 1971.

Malcolm Vleker has been appointed senior systems consultant with Arbat UK. He joined the company when it was formed in 1972 and his previous position was that of senior systems analyst.

Roger Sherrin has been appointed branch manager of Scope Data Systems London area office at Bexleyheath. He was previously a sales executive with Computer Ancillaries of Egham.

Soccer results

Division 1	Aftco 10, Japu "A" 1
Division 2	Danso City 6, John Lewis 2
Division 3	SBS 2, Airfix 0
	3Ma 3, ICL 1

George English, computer centre manager for Compower in Cannock, has been appointed general manager of operations responsible for the overall efficiency of the company's network of regional service centres. Pat Fox has become Cannock centre manager. He was previously the bureau's network controller.

Per Didal, a former senior and principal consultant with the Computer Aided Design Centre in Cambridge, has now become an independent consultant.

Dave Atherton has joined Burrow International as a sales engineer for Scotland and the North of England. Before taking this position, he was a senior design engineer with Marconi Space and Defence.

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George Eaton

Fraser

ICL director

ICL has announced the appointment of Donald Fraser as director of personnel, where he will be responsible for the personnel function throughout the ICL group. He reports directly to Peter Ellis, deputy managing director of business strategy and resources.

Fraser joins the company from NCR where he was a member of the board of directors and was director of personnel resources of NCR's UK company. Prior to this he was personnel director of Rank Radio International, and was also a member of the board of the Rank Organisation.

George Eaton has been named as vice-president of engineering at Cubic Corp's defence systems division. Prior to this he was director of training systems and logistics for two years.

Chris Phelan has been appointed as sales manager of Cambridge Computer Services, which he joins after eight years with ICL as a sales and marketing manager.

John Priestley has joined Olivetti's Ajax Computer Service as a sales executive, based at Warrington. He was formerly a senior systems specialist with Kalamazoo in Birmingham.

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Michael Toumanyan has become central regional sales manager for data communications with Penril Corp. He last worked for Dynatech Data Systems as regional manager.

Simon Nieboer has been appointed general manager of DRG Systems Supplies. For the past three years Nieboer has been a marketing manager for DRG Flexible Packaging of Bristol.

Paul Adams has become the first sales executive of Micro Focus. He joins the company from ICL, where he was account sales executive. In his new position he will be responsible for marketing the company's compiler for microcomputers on a worldwide basis.

John Owen has been appointed managing director of Wilcox Computers. A chartered accountant, he joined the company as company secretary. Norman Wilcox, the former managing director, is now chairman of the board. Formerly project leader with British Aerospace, John Walmsley has joined Wilcox Computers Research and Development team.

Tony Greenberg, a former sales executive with NCR, has joined Reuton Computers as senior territory manager for central accounts North East. Paul Hartwell has become senior territory manager for the South-East branch. He was previously accounts manager with NCR.

Joel Martin, formerly manager of communications of Documentation Inc, has become vice-president and general manager of the company's subsidiary, Docuprint.

Harvey Ullman has been appointed product manager for Sintrom for the company's products, the Dennison range of label printing systems and the Perkin-Elmer 3500 programmable work station. Ullman founded Pragma in 1971 as a UK distributor of American manufactured peripherals and terminals.

DIARY

JULY 12 Education for the future IV: education by computer? ASE, CET, SCST, Bradford University, Bradford, 9.30.

JULY 16 Operational data security workshop. Operational Data Security Corp Hotel Zurich, Zurich, Switzerland.

JULY 18 Who built our freedom? IDPM, Pearl and Dean Studio, Broadwick House, Broadwick Street, London W1, 19.00.

JULY 19-20 IBM CUA Local authorities group. County Centre, Cambridge.

JULY 28-29 Fourth international conference on software engineering. IEE Computer Society, Manchester University, Prof. Fritz Bauer, Institut für Informatik der Technischen Universität, D-8 München, 2 Arcistrasse 21, Postfach 90 94 90 Germany.

SEPTEMBER 6-8 Pattern recognition and image processing. IEE Computer Society, Chicago, Illinois. Contact: Pattern recognition, PO Box 699, Silver Spring, MD 20901.

AUGUST 13-14 Third Rocky Mountain Symposium on microcomputers. IEE Computer Society.

Available from:



Bruce Cannon

Fraser

ICL director

EMPLOYEES of computer installations are being challenged by the Thames branch of the Association of Independent Computer Specialists. The association wants computer people to try to earn more money for charity.

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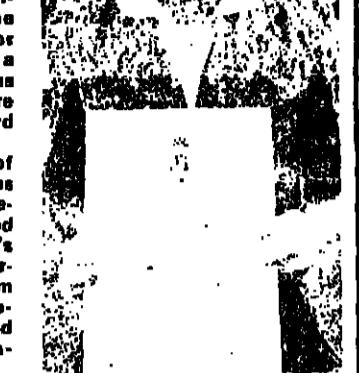
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SEPTEMBER 24-26 Fourth international conference on parallel processing. IEE Computer Society, Manchester University, Prof. Fritz Bauer, Institut für Informatik der Technischen Universität, D-8 München, 2 Arcistrasse 21, Postfach 90 94 90 Germany.

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Colin Sommerville

Fraser

ICL director

AMONG the announcements accompanying IBM's 4300 launch is the fact that the new 3570 discs can also be attached to a System/38. Offering a sevenfold increase in maximum possible storage — up to 2280 Megabytes with four 3570s — the new drives offer a cost per byte of one twentieth that announced with the System/3 Model 8 in 1974.

The consultancy will also be prepared to adapt existing TSB systems — and the availability of the low-cost 1100/80 computer from Univac will make a subset of the new system particularly attractive — but there are no plans to undertake major software development contracts.

Training, and experience working with the TSB team on current systems will also be offered — and has already been given to employees of one overseas client.

TSB has not identified the client, but it is understood to be one of the major Iranian banks, which is also equipped with a Univac 1100, and implemented a pilot online system with TSB assistance. The collaboration has been suspended since the homecoming of Ayatollah Khomeini to Iran, but may restart once order is restored.

In general, TSB hopes to work with a local partner on foreign contracts, and sees good prospects for business in Eastern Europe with banks which are ICL customers. This could involve transfer of expertise and possibly large parts of the Sys-

Challenge for charity

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INTRODUCTION TO PASCAL

How the basic elements of a program fit together

Part 3

THE first part of this series introduced Pascal, its history, uses and implementations. In the second we looked at some of Pascal's data types and how to make use of them in defining data for a Flexitime system. This week, it is back to basics. What are the fundamental elements of a Pascal program and how do they fit together?

Vocabulary

Like English, Pascal's vocabulary is built up of words and numbers. Numbers can be formed in the usual way as integers, decimal fractions or "E"-format numbers. In order to distinguish them from words and punctuation, they must always start and end with a digit.

VALID NUMBERS 1978 -11.00 0.5 -10E16

INVALID NUMBERS -12 .5 -E17

Words are declared at the beginning of a Pascal program. One can imagine these declarations as being the dictionary which applies for the rest of the program. Like most languages, Pascal has certain words which have special, unchangeable meanings. Examples of these are given in Figure 1.

BEGIN END	sin
IF THEN ELSE	Integer
REPEAT UNTIL	true
read	AND
write	PACKED
eof	PROGRAM
reset	TYPE

Figure 1. Examples of pre-declared words.

The reserved words, usually written in capitals, are the basis of Pascal's control structure and number a mere 35. There are also 70 pre-declared words which provide the common types and operations which one does not want to be bothered with defining oneself such as integer, read, sin etc. Bearing in mind that PL/I lists over 250 keywords, this is a good example of how Pascal is kept small and simple at very little cost to the user (and to the great advantage of the compiler).

There are only three trigonometric functions, namely sin, cos and arctan because the others such as cosec, tan etc, can be derived very simply from these three. The point is that each user must build up his own vocabulary and not inflict it on others. Pascal is therefore a general purpose language, but makes no claims to being all-purpose. Before leaving the rather dry subject of lists of pre-declared words, notice that the reserved words are underlined or put in capitals when writing programs but the standard words are not.

Words

Computer languages usually place some restriction on the length of a word. It is interesting to reflect why this is so. The

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By Dr Judy Bishop

This week, it's back to basics, in the third of Dr Judy Bishop's 10-part series, Introduction to Pascal. She looks at the fundamental elements of a Pascal program, and how they fit together.

Dr Bishop, a lecturer in computer science at Witwatersrand University, South Africa, first became acquainted with Pascal when she was studying for her PhD at Southampton University.

are not present on all machines and therefore Pascal allows only the equivalent words, namely OR and NOT. Most of the symbols have their usual (English or arithmetic) meanings but two are perhaps worthy of further comment.

The language designer makes some compromise between these two, the most common being to limit words to 32 characters. Niklaus Wirth came up with a novel approach to the problem. He said that a word should only be limited by the length of a line (typically, but not always, 80 characters), but that only the first eight would be stored. The effect is one which most programmers hardly notice, that is that different words must differ over the first eight characters. For example, we can define in our flexitime system

hours
hoursworked
daysoftheweek
dayspermonth

but we cannot, in the same program, have
hoursworkedlimit
daysoftheweekend
These will have to be rephrased as, say,
limtohoursworked
weekenddays
so as not to clash with the first group.

Where have all the spaces gone?

By now, readers will be asking: Why are the words all squashed up? In fact it is not the words, but the phrases that make most computer terms which are written without spaces. This is necessary in order to distinguish reserved words from others. Changing from upper to lower case is not practical on a machine. Therefore, in machine readable form,

MONDAY TO FRIDAY

is three words and the TO can be recognised as reserved, whereas
MONDAYTOFRIDAY

is a single word.

Some languages that originated with large character sets permit an underscore in identifiers to aid readability and some Pascal compilers (notably Pascal 8000 for the IBM 370) follow this convention. Thus

MONDAY_TO_FRIDAY

is still one word.

Punctuation

Punctuation is important in computer languages because a compiler cannot understand words and needs symbols to help indicate context. Figure 2 lists the 20 or so symbols that Pascal recognises. Others such as | and] were excluded because they

A full stop ends a program. It must come after the last END.
A comma separates lists of like items.
A semicolon comes after every statement except before an ELSE.
A colon balances synonyms or separates a statement from its label.
Is the equivalent of ... in English and means "up to".
An equal sign indicates equality in declarations and expressions.
The becomes symbol is used to assign a value to a variable.
Parentheses are used as usual to delimit sub expressions.
Brackets are used for comments and are usually written ("").
Square brackets are used for array subscripts and sets. They can be written (...).
The arithmetic operators have their usual meanings.
The uparrow (also written as @) is the symbol for pointers.
Less than is a relational operator. The others are: the less than or equal to operator.
the not equal to operator.

Figure 2. Pascal punctuation symbols

The planned inauguration later this year by the Post Office of the world's first public viewdata system, in the form of the Prestel service, brings a pressing need for sophisticated hardware, software and other services for those intending to provide information to the system.

But there is much confusion among both information providers and hardware suppliers as to the type of equipment available, what it can do and who supplies it.

Since teletext and viewdata techniques offer ideal solutions for problems of information storage, retrieval and dissemination for both small and large organisations, these questions arise also among those responsible for such systems.

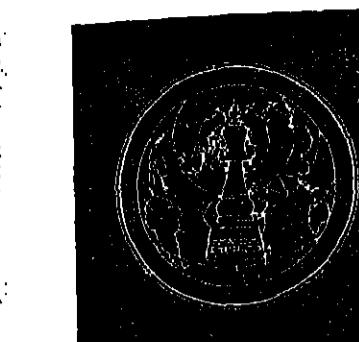
To answer these questions and to bring together suppliers and users at one time in a convenient venue, "Viewdata & TV User" is setting up a select professional exhibition of hardware and services for teletext and viewdata systems.

This is not a show of domestic user equipment for the general public, but an exclusive event entirely devoted to the showing and demonstration of equipment and services for those professionally engaged in teletext and viewdata.

CONFERENCES

COMPUTER packages for information storage and retrieval is the subject of a two-day conference organised by the Institute of Information Scientists, to be held on November 12-13, at the Royal Society, London. A panel of representatives will answer questions on specific topics and a paper will be presented on subjects such as the application of packages on minicomputers and an exhibition will run concurrently with the conference, including displays by users and manufacturers of related hardware and software. For further information contact Janet Maran, Haslewood Lake and Co., 25 Soutern Lane, Buildings, London WC2, Tel: 01-405 6000.

THE first European symposium on real-time data handling and process control to be held this year in Berlin, East Germany, will take place on October 23-25, and the languages for presentation are English, German and French. The conference will be held at Komplex der Technischen Universität, Berlin, and the accompanying exhibition will be held at the Congress Center, Berlin. Areas covered will include process requirements and trends, reliability, error recovery and fault diagnosis research. It is organised by the Computer Association of the German Zentralverband für Betriebswirtschaft, Berlin, Germany.

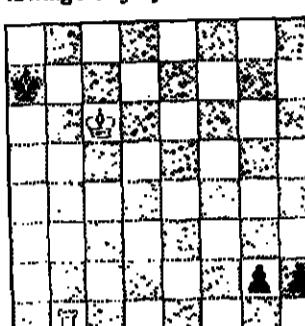


CHESSLAB

This Chesslab presents three problems, all of which were machine-generated. The first arose during a match between two programs, and you are invited to equal the solution which a third program found. The second and third problems were identified by Kenneth Thompson's computations.

Problems that are machine-generated

EVERY columnist must one day slip. Last Chesslab (CW, May 10) implied that the following study by Moravec



has a 14-move solution. This would have bettered the 22-move solution offered by Moravec which was found by Birmingham and Kent's program Master, and also by reader A.C. Nichols of Bristol. The 22 moves go as follows.

1. Rn1+ Kb8
2. Rb1+ Ka7 (Or ab)
3. Rb1+ Kb8
4. Rb1+ Kc8 (Black must change to avoid repetition)
5. Ra1+ (And here White must find a new motif)

(And White claims a three-fold draw)

My remark about 14 moves was based on a note made while sitting at Master's terminal with Peter Kent, but neither he nor I can now reconstruct it. It could

be 1 + 17.

Seasoned programmer though I am, I spent an hour working out the meaning of a PL/I program which contained the statement

A = B = C.

This does not, as one might expect, assign C to B and B to A; rather, it works out whether B equals C and assigns the result (true or false) to A, with all the appropriate conversions.

It seems as if the Europeans were immune to this trap because all the Algol-like languages keep = for equality and use <= for "becomes" in assignments. In Pascal, the above two statements would be written

i := i + 1;

a := b := c;

and the latter will only be valid if a is of type boolean, and b and c of exactly the same type. (Remember the strong typing mentioned in Part 1 of this series.)

The omnipresent semicolon

Pascal, like other Algol-like languages, has free format layout. That is, a statement may run over many lines and many statements can go on one line. Thus there must be some way to distinguish the end of one statement from the start of the next. Enter the semicolon.

Though the finer points of syntax are beyond the scope of this series, it is necessary to mention that Pascal's semicolon is a statement separator whereas PL/I's is a statement terminator. In practice, this means that, in Pascal, the last one in a list may be omitted as in

BEGIN a := b ; b := c ; c := a END;

and there must never be one before an ELSE in an IF-THEN-ELSE statement.

Part 4: Structure — and how to use it.

The questionnaire included sections on the history of the product, definitions of the configurations on which it will run, initial and recurring costs of running it, the functions it provides, the type of manufacturing to which it is suited and a software section giving information on the language it is written in and the documentation and support provided.

Functions asked about in the questionnaire included sales orders processing, stock control, requirements planning, demand forecasting, shop order control and shop loading/capacity planning.

A SERIES of program generators has been developed by Gifford Systems, of Hitchin, Herts, for users of the Fletlab-based language, RPL, on DEC machines. The utilities create master files, update programs, and menu screens.

Generators

Typical questions asked on the subject of requirements planning included how product breakdowns were handled and whether the system incorporated facilities like batching and order recom-

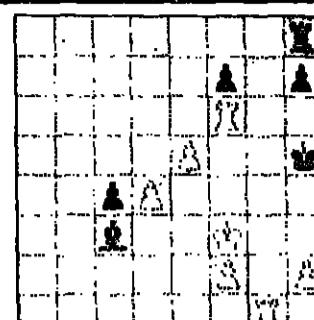


Figure 1

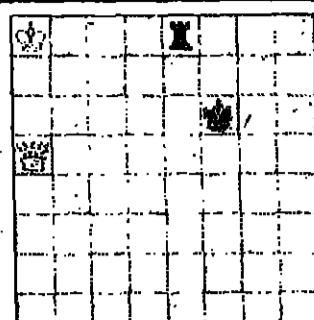


Figure 2

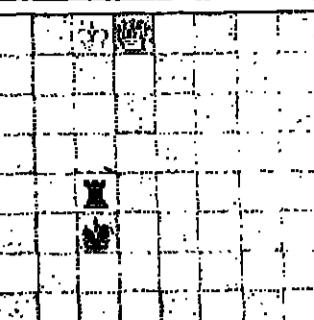


Figure 3

deal with adequately. Meanwhile let me report that two readers only submitted programs.

Alex Bell's, in Pascal, searches all variations two moves deep, and hence strictly speaking should be disqualified, since a "pattern-based" program was asked for. His argument, however, was that for so small a depth, brute-force search can be as economical as a pattern-based approach.

Evidence that this is not so will be presented in the next Chesslab, together with a report on the other entry, a Basic program submitted by David Broughton.

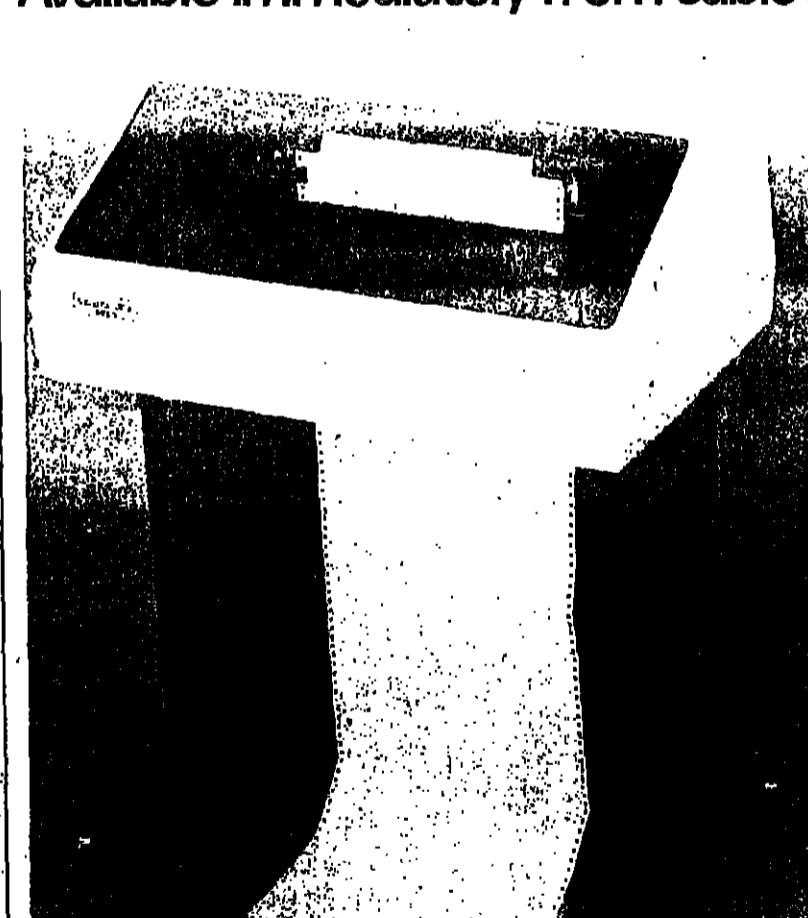
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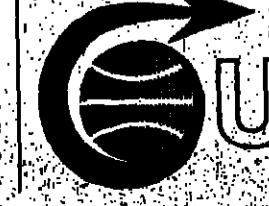


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Appointments

THE INDUSTRY NEWSPAPER FOR DP PROFESSIONALS

Appointments

COMPUTER WEEKLY

Classified Department, Dorset House, Stamford St, London SE1 9UD

Box Numbers: Should be addressed to the box number in the advertisement c/o Computer Weekly at the above address.

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HONEYWELL 2050 ESSEX
An Operator is required to work days only on a Honeywell 2050. The successful applicant will have a minimum of 1 yr. OS 2000 exp. The hours are 9 a.m.-5 p.m. and some o/t. Hols. 20 days. £1 p.w. L.V.s which buys lunch in subs. canteen. Possibility of going into programming at a later stage. SALARY: £4,000 oppg. Call Sally or Elaine.

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A well-known company situated in this picturesque part of Sussex are currently looking for an Operator to work a 32½ hr. week in 3 shifts. If you have 18 mths.-2 yrs. ICL System 4 or ICL 2900 exp. you could be ideal, but co. are willing to train those with IBM 370 or 380 or large ICL 1900 exp. There is also an opportunity to get into programming. Perks incl. 4 wks. hols. rising to 5 wks., subs. canteen and pension scheme. SALARY: £5.5K-6K (Snr. Op.) £6.7K (S/Ldr.). Call Elaine or Sally.

Phone anytime, or for an application form leave your name and address with our answering service.

All vacancies are open to both male and female applicants.

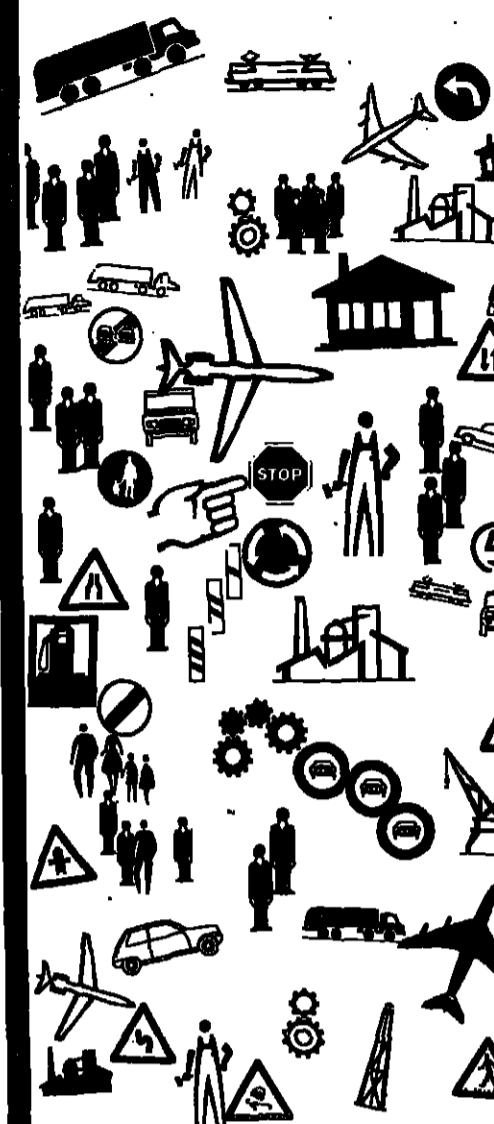
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Progressive minded COBOL or PL/I programmers with three to four years' experience, these are exciting opportunities for you to gain more varied project and business experience.

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Our client is a friendly, employee-conscious computer consultancy. They offer a variety in your career prospects which will give you unrivalled opportunity to use your potential

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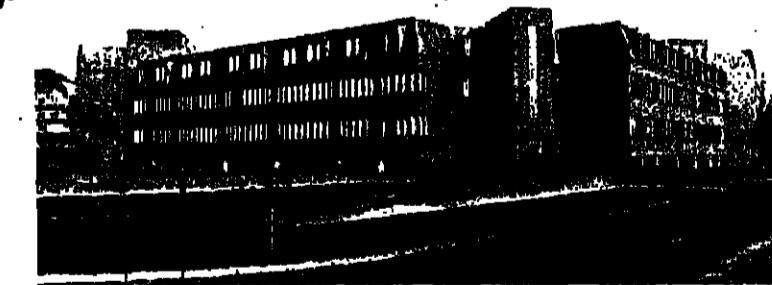
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We are the Systems Services Division of a leading International Insurance Broker. A recent merger and our successful development programme have resulted in plans for expansion of both our U.K. and European development departments. Opportunities now exist for both Analysts and Programmers to join in our exciting future.

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With a minimum of 3 years experience including a programming background and, ideally, incorporating a knowledge of IBM hardware and teleprocessing.

If you meet the qualifications and more importantly, have the drive and ambition to succeed in a challenging environment, phone Mike Hodder on Colchester 69191 or write to: Mrs. J. Smith, Personnel Officer, SEDGWICK FORBES BLAND PAYNE GROUP, Grove House, Witham, Essex.

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With a minimum of 12 months experience in either Assembler, PL/I or COBOL.

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COMPUTER SHIFT LEADER SUSSEX

A vacancy has arisen with a well-established and expanding electrical company in a beautiful part of Sussex.

This might suit either a current shift leader or an operator with two years' + experience wishing to take the next career step.

Reporting to the Chief Operator the Shift Leader will be responsible for running an on-line Production Control System with 31 terminals plus some batch work. Shifts of 8-5 and 4-12 are worked on alternate weeks.

A Burroughs 3700 is the in-house computer but other experience might be considered as the company are about to install a 2930 within a year. Excellent conditions with a negotiable salary and generous assistance with relocation if applicable are offered. Overtime is available.

For full details and early interview contact:

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36 The Broadway, Crawley, Sussex
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FIFE REGIONAL COUNCIL — FINANCE DEPARTMENT SYSTEMS AND PROGRAMMING SECTION

SYSTEMS ANALYST

Salary Grade — A.P. V £6,808 / £6,868 (inc. supplement)

Due to internal promotional vacancies there is a vacancy exists for a systems analyst to join one of our Project Teams.

Applicants should have at least 2 years' programming experience and systems design experience. They should be able to demonstrate an ability to work in a team environment. A professional qualification would be an advantage.

COMPUTER PROGRAMMER

Salary Grade — A.P. I/IV £3,881 / £4,403 (inc. supplement)

Due to an internal promotion, a vacancy exists for a computer programmer to join one of our Project Teams.

Applicants should have at least 2 years' experience of programming in COBOL. A wide variety of local authority work is undertaken on behalf of the Regional and District Councils. Other projects are excellent opportunities for promotion on salary grade. Contracting directly or otherwise will be acceptable.

Application and further details may be obtained from Regional Personnel Officer, File House, North St., Glenrothes, Tel. Glenrothes 75441 Ext. 245. It is when completed form should be returned no later than 30th July 1979. Please quote Ref. Number RP/49/58/CW

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Installation Programmers should ideally have experience in both computing and typesetting, but applicants with experience limited to either field will be considered if they can demonstrate an ability to acquire the necessary competence in the other field. Development programmers should have specific and solid experience of programming Z80.

All jobs offer scope for personal development and foreign travel (Europe and USA) combined with the satisfaction of working for a small closely knit company situated in a very pleasant area of rural England.

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We are looking for a few highly competent Technical Authors to join computer design teams working on advanced digital equipment and software projects. They will be expected to work with a minimum of supervision, gathering information as projects evolve and producing finished technical literature.

Applicants, male or female, should either be experienced technical writers or have several years' industrial experience preferably in digital electronics or programming and the proven ability to write clear concise English.

The posts carry attractive salaries in the range £4,000 to £6,500 and a productivity bonus scheme is in operation. Relocation expenses are available for staff coming from outside the area.

Ferranti Computer Systems Limited is a leading British manufacturer of real-time computer systems with a world wide reputation for quality and reliability. The vacancies are at our Wythenshawe Division on the South Manchester/Cheshire border within easy reach of open country and good residential areas.

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Our Technical Design Branch located in Nottingham requires a Technical Group Manager who will be responsible for all design and implementation aspects of a range of computer projects.

The computing equipment used includes ICL 2980 and IBM 360/370 mainframes and a number of mini-computers, using batch, RJE and on-line facilities for system development and production processing.

This position offers an excellent opportunity to control a wide variety of projects and requires extensive practical experience of all facets of computing with particular emphasis on technical design.

There is a contributory pension scheme and the transfer of existing pension rights can, in most cases, be accepted. There are also free and reduced rate rail travel facilities.

Applications stating age, education, qualifications and experience should be sent to:

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222 Marylebone Road,
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If these geographic areas interest you, telephone DON KNAGGS now on WORCS. 427077 (BEWDLEY 400036, evenings after 7 p.m. and w/e) or write to THE MOUNT, 1 ST. JOHNS, WORCS.

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Department of Electrical Engineering Science

Senior Research Officer

To work on all aspects of microprocessor based projects in the Essex Electronics Centre. The Centre undertakes a wide range of projects concentrating on the application of electronics to problems encountered in industry.

Candidates should be qualified in electrical engineering or computer science to degree level and some practical experience in industry would be an advantage, but not essential. This post offers a chance to recent graduates to be involved in real industrial problems while benefiting from an academic environment. Salary will be in the range £14,232 to £17,145 according to experience. Application form immediately.

Applications including a curriculum vitae and the names and addresses of two referees, should reach the Registrar (AG/88/CW), University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained by 2nd August, 1979.

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SYSTEMS ANALYST ANALYST/ PROGRAMMER

£5526-5958

The Executive is a user of the West Yorkshire Joint Computer Committee's IBM 370/168 operating under OS/VS1. Processing of the Executive's systems is from several remote job entry terminals, and interactive terminals are used for program development.

SYSTEMS ANALYST

Must have had experience in the preparation of a major system, and been involved from feasibility study to systems design and implementation including user training.

Two years' programming experience in COBOL, and a working knowledge, or desire to learn systems design and implementation. Applicants with other than IBM experience will be considered for re-training.

The Executive offer the following benefits; modern working conditions, canteen facilities, 32 days' paid holiday, concessionary travel and a good pension scheme.

Wakefield — Cathedral City of West Yorkshire close to M1 and M62 within easy reach of National Park and East Coast Resorts. Assistance with relocation expenses in appropriate cases.

Application forms are available from the Personnel Manager, WYPTC, Metro House, West Parade, Wakefield WF1 1NS. (Tel. 0924 78234, Ext. 284) to be returned no later than 30th July, 1979.

The Company

The Location

Please write or telephone to:

Xenotronic Thetford
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Telephone (0379) 4611
For an application form and to arrange for an interview

JBA

Electronic Office/Mailing System

gross to £20,000*

A new development team is to be formed by one of the world's leading software houses, Computer Sciences Europe, to design and develop a complete word/text processing system. This is real "leading edge" technology, representing major push into the automated, electronic office age.

The range of software development experience required from the team as a whole, is as follows: multi-tasking; data/file management; network planning;

word/text processing; graphics; data comms, involving protocols such as

SDLC or HDLC.

*On moving to Holland, the top 35% of gross salary is exempt from tax — extremely valuable! If you would like to contribute to the project and would like a permanent, career-oriented position into the bargain, phone now for more detail.

Contact: Andy Wright

Business Analyst (Minis)

Berkshire Neg £8,000 + Benefits

This is an outstanding opportunity for a successful Analyst/Programmer to move on to pure Business Analysis. You will be given the chance to design and implement new and extremely complex financial/accounting systems around a worldwide network of minis. This will necessarily involve overseas travel (to the U.S.A. and Far East) to a limited extent — is NOT plane-hopping or extended stays abroad — to help implementation at each site.

Whatever your hardware background, if you understand the concepts behind networked minis and have a sound accounting systems knowledge, this represents a real career building move.

Company benefits include an excellent pension scheme plus medical (like BUPA/PPP) insurance and free life assurance schemes. Generous relocation assistance is also available if required. Additionally, the initial starting salary will be reviewed within 6 months.

Contact: Andy Wright

Analyst Programmer

c. £7,000

Midlands A large engineering organisation with world wide data processing activities wishes to recruit an Analyst/Programmer to join an existing systems development group.

Applicants should have at least three years in commercial applications development, ideally as a senior programmer, with some recent design experience. Knowledge of IBM 370 systems is essential. IMS and DL/I experience is desirable.

This is an outstanding opportunity for a professional to be involved in the implementation of a multi-national database.

For further details and an informal discussion

Contact: Jim Baker

INSURANCE COMPANY

Systems Analysts

South of England

Salaries up to £6,800 + mortgage subsidy + non-contributory pension + free permanent health scheme + low interest loans + subsidised canteen and sports/social club + all relocation expenses + other benefits.

A very attractive prospect for career-minded Analysts, keen to progress in a growth-oriented modern company putting in databases and TP systems, promising exciting design and development work well into the 1980's.

We are keen to hear from Analysts who have a sound business background, a good knowledge of COBOL and experience of system design over two to three years, ideally in an accounting, financial or banking environment.

Contact: Mike Creamer

Operations Manager

To £5,500

West London In order to successfully implement the installation of a new mini computer, our client is now seeking an Operations Manager to be wholly responsible for day-to-day running of the site. The principle areas of responsibility will be scheduling - screenmix work flow and supervising a staff of production/data controllers.

However, the successful candidate can look forward to progressive involvement in new systems development.

Applicants must be able to show a sound background in all aspects of computer operations and control, and have the stature and self-confidence to represent the data centres interests effectively, at all levels.

Contact: Margaret Stevens

GERMANY

Consultants

NETT £20,000 to £32,000

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The successful candidates will be fully conversant with technical internal software, de-bugging and tuning. The consultancy status truly reflects the level of the positions, where technical knowledge will be sought and ability fully utilised. Long term prospects and high rewards are offered.

Contact: Mike Creamer

For further information on any of the above vacancies, please contact the appropriate consultant.

If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants,
16 Maddox Street, London W1. Tel: 01-491 4478



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Systems Analyst
W. London
To £6250

A U.S. multi-national manufacturing company has a major subsidiary in W. London with an expanding ICL System 10 installation. Due to the rate of growth of the organisation, now £30 million turnover a year there is a tremendous increase in demands placed on the DP department of a managerial Information and Inventory control nature.

If you have a minimum of 2 years in DP with one reasonable sized system designed and implemented, then the company will be very interested in seeing you. This could be an ideal opportunity for an Analyst/Programmer who wishes to move up to Systems Analyst work and who can make a major contribution to the planned growth of the installation.

Excellent company benefits include subsidised canteen facilities, contributory pension scheme and contributory life assurance. Relocation expenses will also be generous.

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N.W. LONDON

c. £6500

Using the computing facilities of a medium range IBM computer, exciting opportunities have arisen within our client's installation for programmers to develop their careers in analysis. Joining a young, enterprising team of professionals, successful applicants will be encouraged to contribute effectively to the design and specification of projects as well as the programming effort.

The company is a very successful manufacturing organisation maintaining an impressive growth rate over recent years. This growth is reflected in the recent introduction of their new computer and the variety of major systems planned to be developed.

Ideal candidates will be able to offer good commercial programming experience supported by the desire and potential to advance into an analytical role. After induction to the company's commercial procedures and awareness of the data processing standards adhered to, every opportunity will be afforded to applicants to apply their skills in developing systems from broad concepts already planned.

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Ref: N1/1207

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We are taking a fresh look at our approach to information systems on our manufacturing plants using the latest computer technology to create a highly integrated data base. This will be the source of management information and the base for development of advanced applications. The project will use the latest computer hardware and Esso's worldwide experience of computer project development.

The men and women who participate in this project will be on the ground floor of this challenging new activity and they will be expected to develop as professionals, with the project.

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This is a unique opportunity for a proven engineer to take overall responsibility for implementing, commissioning, developing and supporting all communications on site. You should have a degree in Computer Science or equivalent and at least 5 years' experience in telecommunications and/or process control software systems. Experience of Process computing real time software systems, or IBM Terminal-teleprocessing systems would be an advantage.

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That's the way everyone works at Esso Chemical Ltd. It's part of our management philosophy - to give young people real responsibility, with equally real rewards to match. Which is why our benefits package includes generous relocation expenses to this attractive part of the South Coast which has the Solent on one side and the New Forest on the other. So you can enjoy wide open opportunities in a part of the World that still has plenty of wide open spaces.

To find out more about the opportunities we are offering, telephone Howard Winters, Employee Relations Adviser or write for an application form to: Esso Chemical Limited, Fawley, Southampton, Tel: Southampton (0703) 893822.



SYSTEMS PROGRAMMER

The Daresbury Laboratory, an establishment of the Science Research Council, situated in the north Cheshire Country, is constructing a Nuclear Structure Facility known as the NSF. The project is based on a tandem electrostatic accelerator which will be the largest in the world. When completed it will provide a facility of world standard which will attract users from both the national and international science communities.

The NSF machine represents a significant step forward in the technology of this type of accelerator and requires a powerful computer control and monitoring system. It is in fact the first accelerator of its type to be designed with comprehensive integral computer control.

The control system is based on a central Interdata 7/32 computer with up to 10 peripheral Interdata 7/16 computers. A vacancy exists for a Systems Programmer to join a small team of computer professionals designing and producing the software to control this network. Many problems associated with internal two colour displays, plant data handling and the operator interface, made particularly challenging by the distributed nature of the system, remain to be solved and a considerable amount of programming in both high and low level language will be required to complete the system. The post will provide a sound base for a career in computer control systems in general.

Applicants must possess a good honours degree or equivalent and experience in systems programming. The appointment will be made either at Scientific Officer or Higher Scientific Officer level according to qualifications and experience on the following entry scales:

Scientific Officer £2,839 to £4,415
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There is a non contributory superannuation scheme, a generous leave allowance and a flexible working hours scheme. Closing Date: 10th August, 1979. Write or telephone 0925 85000 ext. 487, for an application form quoting reference number 01-614-1-W-1.

The Personnel Officer
DARESBURY LABORATORY
Science Research Council
Daresbury, Warrington WA4 4AD

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Ring David Abbey for further details on 01-281 8016.

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is embarking on an ambitious computer project for its Finance Department, involving:

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We are looking initially for a

COMPETENT PROGRAMMER

to work closely with the team of software consultants now actively engaged in designing and programming the new systems. He or she will be expected not only to participate in getting systems off the ground, but also in ensuring that they stay there.

We would prefer someone aged between 25 and 30 with at least two A-levels and around two years' experience of BASIC in any of its variants.

If you would like to be in at the beginning of commercial DP development in a rapidly changing organisation, phone or write to:

Neil Donald, Personnel Manager
The Financial Times Ltd.,
Bracken House, 10 Cannon Street EC4P 4BY
01-248 8000

Banking- IBM Midas 34

An International Consortium Bank based in the City are seeking a suitably experienced man or woman to be responsible for the installation and subsequent operation of an IBM 34 Midas computer.

In addition to general Data Processing experience, programming ability is required for later modification. Banking experience is preferred.

A competitive starting salary will be paid. Other benefits are above average, including low interest mortgage and profit sharing scheme.

Applications will be treated in strict confidence. Please write initially stating how the above requirements are met and present salary to: Personnel Manager, UBAF Bank Limited, P.O. Box 188, Commercial Union Building, St. Helen's, 1 Underhill, London EC3P 3HT.



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We are a progressive organisation, fully prepared to recognise potential in lesser experienced applicants. So if you have a background in analysis and would like to become involved in problem solving and user liaison we would like to hear from you.

We offer excellent conditions, above average benefits, including a generous relocation package.

Telephone our Advising Consultant,
MARTIN STAINTHORPE ON 021-236 3781 (24 hour answering service)
OR 021-744 1862 (evenings and weekends)

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For a new accounts payable system forming part of a large Management Information system. Use of new techniques possible including data base and minis. Genuine prospects of promotion to Project Leader.



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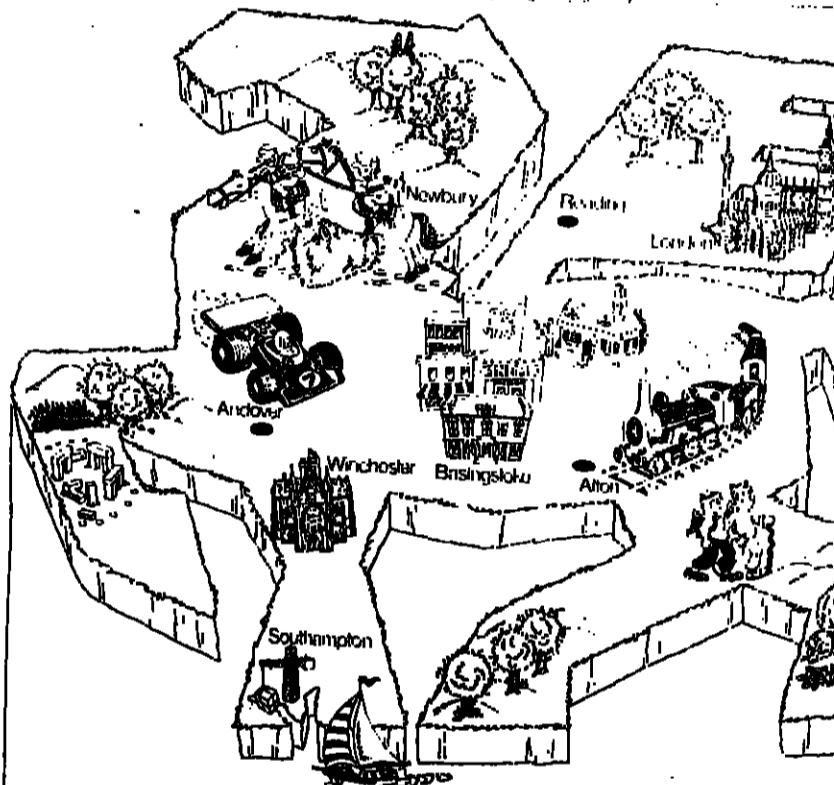
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OPERATIONS SUPPORT ASSISTANTS

CROYDON

Salary within range £5,163 to £6,042 plus current self-financing production payment.

Do you have 2-4 years' operating experience on IBM mainframes but would like a change from shift work? Then why not consider joining Segas as an Operations Support Assistant within the busy computer installation at Croydon comprising 3032 and 3031 CPUs and a large scale TP network.

Essential qualifications are a minimum of two years' operating experience using OS/VS1 and/or VM/370, a thorough knowledge of OS JCL and utilities and the ability to communicate with both technical and non-technical personnel.

Duties will include problem troubleshooting, JCL development, documentation of operating procedures and liaison with Systems Development and Technical Support staff.

For further information, phone Paul Colver on 01-886 9487 (daytime) or 01-854 6956 (evenings), or write giving full details to: Personnel Manager, Segas, Segas House, Katherine Street, Croydon CR9 1QZ.

People come first with
SOUTH EASTERN GAS

COMPUTER SUPERVISOR SYSTEMS ANALYST

We are Towler Hydraulics one of the world leaders in the manufacture of hydraulic equipment and a subsidiary of the Thorn Group of Companies.

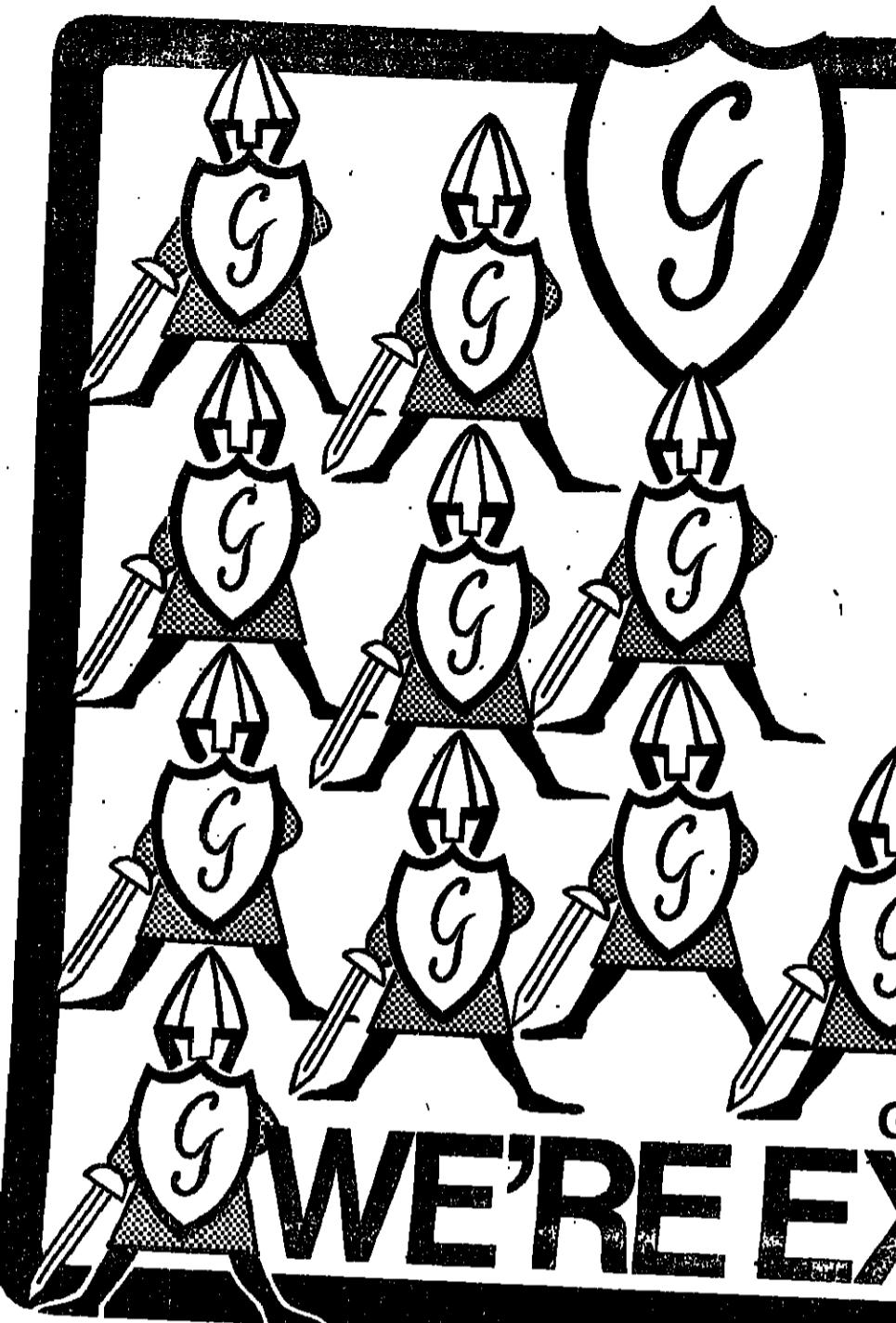
Our continuing search for improvement and efficiency in both home and overseas markets has necessitated the setting up of a computer department based on an IBM 3/15. Your task will be to head up the department and direct the staff of Analysts, Programmers, and Operators. Major objectives include the introduction and improvement of systems, supervising programming for new applications, liaising with senior management, IBM and Thorn Group computer management and making recommendations on all hardware and software for future developments.

The job has wide ranging responsibilities and calls for you to be not only a highly experienced Analyst but also a capable manager.

The rewards offered include an attractive negotiable salary and a comprehensive big company benefits package which includes full relocation expenses as necessary.

To find out more write with full background details to Peter Stuttiford, Personnel Manager, Towler Hydraulics Ltd, Oaklands Road, Rodley, Leeds.

TOWLER



YES WE ARE EXPANDING AND WE NEED YOUR HELP!

Guardian Computer Services is a software house employing over 30 computer specialists developing tailor-made, commercial on-line systems in a project environment on the following hardware:

IBM: System/32, System/34, System/38, Series/1 and 3110
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Currently we are offering positions to:

SYSTEMS ANALYSTS

with at least two years' analysis experience on any disc-based mainframe or minicomputer, plus concurrent or previous programming experience.

We can offer you the chance to widen your analysis capability, and obtain Project Leadership and Management experience in the first-time user environment.

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STARTING SALARY TO £6,500, REVIEWED AFTER SIX MONTHS

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TWO SALARY REVIEWS PER ANNUM
EXPENSES SCHEME
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FLEXI-HOURS
IN-HOUSE HARDWARE
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If you wish to develop your career and obtain genuine job satisfaction with one of the North's most successful software houses, in either Manchester or St. James's House, Pendleton Way, Salford, Manchester M6 5JA. Telephone 061-737 7352.

GUARDIAN COMPUTER SERVICES LTD
WE'RE EXPANDING!!

JBA

Prestel/Viewdata Specialists

Germany

Immediate vacancies exist for consultants who have considerable experience of information transmission systems, such as Prestel, Viewdata, etc. Data communications expertise and database knowledge is vital to the positions, particularly where concerned with large mainframes and front-end processors. A user contact background is desirable. Our client is one of the largest consultancy organisations in the world with over 3,000 employees. On this solid foundation, the company offer real up-market remuneration packages and excellent relocation assistance. Further, the prospects of continuation of projects at very senior levels in a worldwide market place is virtually second to none.

Contact: Mike Creaner

Data Base Consultants

London based

Applications are invited from Senior Data Base Specialists with a wide computing and business background to join a leading consultancy. Candidates should have experience of special analysis and design methods appropriate to the data base approach, have worked with at least one of the proprietary systems and be able to compare the different types of solutions available. Appointees will be required to work on a variety of client projects, ranging from advising on feasibility through to the detailed design and implementation of specific applications. The ability to work in a sophisticated environment, coupled with the drive, personality and technical expertise to communicate on the same level as senior managers is of paramount importance.

Contact: Margaret Stevens

Systems Programmers

Munich

Permanent positions are available with one of Germany's leading hardware manufacturers, for experienced IBM Systems Programmers who possess a minimum of 3 years experience. All successful candidates will receive full relocation expenses, including agents fees, an initial family separation allowance and a minimum of 6 weeks holiday per year (plus all statutory holidays). German lessons will be provided.

Contact: Andy Wright

For further information on any of the above vacancies, please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants,
16 Maddox Street, London W1. Tel: 01-491 4478

Software Specialists

Home Counties

from £20,000 up to £30,000 + bonus

A major software house, with an impressive growth record, is continuing to expand and currently has vacancies for Programmers and Designers to work on the development of middleware associated with established operating systems. Candidates should have at least 3 years experience working on software such as OS, DOS, VMS, BMS, communications or networks. A background of implementing large mainframe systems, perhaps with a manufacturer would be an advantage.

Excellent salaries, relocation assistance and profit sharing scheme.

Contact: Jim Baker

Technical Analyst
Bracknell neg. £7,000 - £8,000

This is an outstanding opportunity to join a successful British Air Freight Forwarding Company, to help consolidate and expand the operation of its relatively small d.p. function, both here and overseas. The company runs a worldwide network of minis, so although specific hardware experience is not required, candidates must have a thorough understanding of the concepts and possibilities of network processing. A sound knowledge of accounting/financial applications is, however, essential and must be combined with the ability to work at a detailed technical level.

Company benefits include an excellent pension scheme plus medical and life assurance - generous relocation expenses can also be made available. Two salary reviews per year can be expected.

Contact: Andy Wright

Programmers & Analysts

South of England up to £8,000 + mortgage subsidy + benefits

One of the most prestigious insurance services companies in the UK with an impressive 40% growth factor last year, are recruiting additional staff for development work. Many systems are under way including installation of a DMS2 database and a large real-time terminal network. Completion of these projects opens the way for a considerable number of additional systems thus ensuring creative work for the future.

Programmers must have at least 18 months COBOL experience in a batch or real-time environment. Analysts should have real-time commercial or accounting applications experience. First class location, outstanding employment package and a realistic career growth. Call for more details.

Contact: Mike Creaner

PROJECT LEADER

Surrey

A unique opportunity with a long established bureau/software house has arisen due to expansion. The company seek a programmer with at least five years in depth experience of System 10 and its software to assume the position of Project Leader.

The ideal applicant will be expected to contribute their experience to projects being designed and developed on the System 10. You will also be expected to write programs if necessary, and advise others about programming. The company offer an excellent salary with the added advantage of a company car.

Reference HK28/1

BASIC + BASIC + 2 PROGRAMMERS

Central London

to £8000

A small but rapidly expanding Software House are currently seeking programmers with a minimum of 18 months' BASIC + or 12 months' BASIC + 2.

The company have PDP 11/34 in House and all major developments utilise the hardware. A wide range of applications are currently being designed, mainly in the commercial area.

They offer a very good career path moving if so desired into Analysis or Systems programming at an early stage.

The company offer an excellent salary plus all the fringe benefits you would expect from a dynamic and growing company.

Reference HK28/3

COMMERCIAL ANALYST

Central London

to £8500

One of the leading Systems Houses in London currently require a Commercial Analyst with the minimum of 2 years' Analytical experience.

Most of the work undertaken by this company is on Mini's, so some knowledge of Mini's is desirable but not essential.

The ideal applicant would have already designed one major system from feasibility to implementation in a commercial area.

The company offer an excellent salary and the career path is naturally self generated.

01-439 7871

Reference HK28/5

to c£7000

BURROUGHS COBOL PROGRAMMERS

City

c£6,500 + 3% Mortgage

A merchant bank operating a large Burroughs installation including a mainframe and several minis is seeking several cobol programmers with good experience to develop into analysis work.

You will be of interest if you have eighteen months or more COBOL experience and are self motivated without the need for close supervision.

The company offers an excellent salary together with very good fringe benefits including a superb subs staff restaurant, L.V.s, Christmas bonus, etc.

Reference BP28/2

JUNIOR SYSTEMS ANALYST

City

c£6,500 + Mortgage

A major financial organisation operating an ICL 1900 installation which will be updated to an ICL 2900 by the end of the year, is seeking a junior Systems Analyst who is looking to expand on their current experience.

The minimum requirement is 18 months' systems experience gained on any hardware. A programming background would be useful although not essential.

The company offers a very good starting salary together with extremely good fringe benefits including a 4% MORTGAGE, BONUS, FREE LUNCH, session ticket loans, non-contributory pension etc.

Reference BP28/4

PL1 OR ASSEMBLER PROGRAMMERS

N. London

to c£7000

A large manufacturing COMPANY OPERATING AN IBM 370/138 requires a number of programmers to expand their Data Processing department, which is undergoing a major development scheme.

The minimum requirement is twelve months' experience, although the vacancies cover a range of positions and expertise.

The company offers a very good starting salary together with the usual fringe benefits one would expect of an organisation of this size.

01-439 7871

Reference BP28/6

A chance to combine your problem-solving skills and technical expertise

with CTL, one of Britain's largest independent business computer manufacturers, responsible for the successful 8000 Series Systems. We are growing fast and have a number of opportunities on the support side of our Customer Services Division:

PRODUCT SPECIALIST - HARDWARE

up to £7K+car allowance*

to become our Technical Specialist on current products, provide cost effective servicing policies and liaise closely with the Marketing and Design divisions on the development of new products.

Candidates, HNC or degree level, should ideally have up to 5 years' hardware products experience, including peripherals and support in a service/design environment. Knowledge of programming, microprocessing and appreciation of systems software is essential.

SUPPORT ENGINEER - SOFTWARE

up to £6K+car allowance*

to act in a Project Manager role for systems implementation, and then to monitor and advise on the use of the operating systems and applications software. There will be considerable technical contact both with customers and our own engineers.

Candidates, HND or degree level, will have a minimum of 2 years' experience in a computer or associated industry in the implementation and application of software systems.

JUNIOR SOFTWARE SUPPORT ENGINEER £4.5K - £5.5K+car allowance*

to be responsible for activities relating to the provision of systems support to the customer base and our field engineering staff, including involvement with product development, performance and testing exercises and specific monitoring of customer situations on site.

This career opportunity would ideally suit an HND student or someone with at least 1 year's experience in support/design software environment or computer operations.

All posts, based at Hemel Hempstead, are open to men and women, and offer a real opportunity to join a fast growing British computer company developing mini-computer systems in software and hardware.

Salaries are negotiable according to experience and will also include a car allowance of £950 p.a. Excellent company benefits and career prospects.

Please write, or telephone, for further details/application form to Jim Parle, Personnel Officer, Computer Technology Ltd, Eaton Road, Hemel Hempstead, Herts HP2 7EQ. Tel: (0422) 3272.

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Full-time PROGRAMMER for International Research into Dialysis and Kidney Transplantation.

The European Dialysis and Transplant Association requires a programmer with initiative and experience in FORTRAN and ALGOL to work at U.K. Transplant, Southmead Hospital, Bristol. An in-house DEC PDP11/34 and South Western Universities computer network is used. Salary in the range of £4,421 to £5,326 depending on age and experience. Superannuation as for an NHS appointment.

Applications to Dr. A. J. Wing, EDTA, St. Thomas' Hospital, London, S.E.1. (Telephone: 01-833 0938) from whom a full job description is available.

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.



The British Computer Systems and Software Company

Specialists since 1971 in UK and International computer appointments. We have many other jobs on our files and offer a career counselling service to computer professionals.

Hardware Development Manager

£6,000 - £10,000 + car + bonus

Our clients are about to build a hardware team to work on the design and development of a new and important computer sub-system. The Project Manager will have a key position, being initially responsible for setting up a team of hardware engineers and eventually taking responsibility for the planning and progress control of the project within the shortest possible timescale. In addition to the management and technical supervision of the hardware team the manager will work in close association with the software teams and will need to communicate with top executives.

We are looking for an experienced Project Manager who has had team responsibility as well as involvement in a major hardware project from design to implementation. This should preferably be in computer design with an essential engineering background of the highest standard in a related field.

This is a first-class opportunity to lead a challenging project within a company offering first-class advancement in an expanding organisation. Ref. 515/CW/Renee Nute.

Please ring Renée Nute on 01-242 9356 or write to the address quoted. If it would be more convenient to telephone in the evening or during the weekend please ring 01-874 6372.

OCC Computer Personnel Limited, 16 Bedford Row, London WC1R 4EB



INFLUENCE THE DEVELOPMENT OF COMPUTING IN THE NORTH-WEST THAMES REGIONAL HEALTH AUTHORITY

SYSTEMS DEVELOPMENT OFFICER

SALARY SCALE £7,305-£8,777 p.a. (Pay award pending)
(including London Weighting)

A vacancy exists for a Systems Development Officer, accountable to the Regional Computing Services Officer for the development of systems for the Regional Health Authority and Area Health Authorities within the Region, which covers Bedfordshire, Hertfordshire and Districts in North and West London. We are currently reviewing our computer policy and the person appointed will have an influence on the future strategy for computing development. Sound managerial experience is essential, as is the ability to liaise with staff in all disciplines and at all levels. A large ICL 19045 is installed in a new building in North London (near Finsbury Town Hall).

Application forms and further particulars from the Regional Personnel Officer, North-West Thames Regional Health Authority, 40 Eastbourne Terrace, London W2 3QR (Telephone No. 01-262 8011, Ext. 281), returnable by 27th July, 1979, quoting reference number 510/CW/1277. Applicants from outside the service commence at the minimum of the scale.



ROBERT GORDON'S INSTITUTE
OF TECHNOLOGY, ABERDEEN

MANAGER OF COMPUTER SERVICES

To control and develop the Institute's Computer Services including enhanced DEC 20 system.
Salary £10,317 per annum.

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Salary £7,233 per annum
Assistance with removal expenses.

Details from:-
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Schoolhill
ABERDEEN AB9 1FR

UNIVERSITY OF LIVERPOOL
Department of Physics

EXPERIMENTAL OR SENIOR EXPERIMENTAL OFFICERS

To collaborate in the design and construction of a Recel Separator which will be used to analyse particle beams according to their energy loss. The Recel Separator will be at the S.R.C. laboratory at Daresbury in Cheshire.

(a) E.O./S.E.O. (Hardware). To design and compilation devices for signal generation and signal conditioning in interface to a control computer.

(b) E.O./S.E.O. (Software). To write programmes for control and running of the Recel Separator in real time.

The successful applicants, who will work primarily at Daresbury, will have experience (or equivalent) qualification and at least three years' relevant experience. The gross annual salary will be a period of two years. Salary, according to pay scale, increments, on the scale for Experimental Officers (up to £10,108 p.a.) or Senior Experimental Officers (up to £7,145 p.a.).

Candidates, male/female, should telephone or write for an application form to:-

Anne Flinney,

Forward Trust Limited

12 Colthorpe Road, Edgbaston,
Birmingham B15 1QZ.
Tel: 021-454 8141 ext. 247.
A subsidiary of Midland Bank Limited.

Application forms may be obtained from the Registrar, The University, P.O. Box 126, Liverpool, L69 3BX. Quote Ref: RV/BBG (1st or 2nd)

Cleveland Area Health Authority Middlesbrough General Hospital Electronic and Bio-Medical Equipment Technician

A SENIOR ELECTRONIC TECHNICIAN is required to work with and be part of an existing team of technicians involved in the maintenance of a wide range of electronic and bio-medical equipment in the District.

The successful candidate, who will be responsible to the Chief Electronic Technician, will need to have been engaged on the more advanced work of the electrical workshop with experience of electronics in the computer field being a decided advantage.

Applicants must possess a minimum qualification of O.N.C., H.N.C. or H.N.D. or equivalent in Electrical/Electronic Engineering.

This appointment furnishes the ideal opportunity for a person with high skill and ability in electronics maintenance to expand their knowledge into the interesting field of Bio-medical equipment which includes brain and whole body scanning equipment.

Whitby Council conditions for B.T.B. Staff apply. Hours of duty normally 38 per week. Facilities for further education and training available.

Salary Scale: £3,744 to £4,788 p.a. (Medical Physics Technician II)

Application form from District Administrator, District Offices, Poole Hospital, Nunthorpe, Middlesbrough, to be returned by 10th August, 1979.

South Tees Health District

Forward Trust Limited, a leading finance house and member of the Midland Bank Group, wish to supplement their management services function by the appointment of experienced computer personnel.

Business Analysts

£6,500-£8,500 p.a.

Candidates will require several years commercial systems experience. They will lead and control teams investigating business problems, specifying solutions in non-technical terms.

Analytical and evaluative skills, together with a capacity for creative thinking, are essential.

Senior Systems Analysts

£5,500-£7,300 p.a.

Candidates will have a minimum of 3 years' systems analysis and design experience with proven involvement in all aspects of analyst work. A programming background will be preferred and potential for career progression to Business Analyst is essential.

Forward Trust are currently reviewing the total company approach to computing, leading to a planned installation of a network of terminals by the end of 1980. This network will be supported from the head office at Birmingham and in time will lead to re-design of the existing batch systems on to a company database. Experience in On-Line network, telecommunications and database techniques will, therefore, be an advantage in applying for the above positions.

Commencing salaries for the above positions are negotiable, according to experience. Established staff are eligible to apply for staff loans at preferential rates of interest and there is a non-contributory pension scheme plus the security of being associated with a major banking group.

Candidates, male/female, should telephone or write for an application form to:-

Anne Flinney,

Forward Trust Limited

12 Colthorpe Road, Edgbaston,
Birmingham B15 1QZ.
Tel: 021-454 8141 ext. 247.
A subsidiary of Midland Bank Limited.

Application forms may be obtained from the Registrar, The University, P.O. Box 126, Liverpool, L69 3BX. Quote Ref: RV/BBG (1st or 2nd)

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Join the superstars

... It's pure innovation that has put Wang into the superstar ratings, and at the forefront of computer sales in the medium, mini and word processing markets. Although in the superstar ratings, Wang have their feet firmly on the ground, combining sound business acumen with a simple yet sophisticated product range designed with today's needs in mind and based on 'state of the art' equipment. They have gained their success not only by having very competitive products; keenly priced and well supported, but by gathering a well motivated, well rewarded team of professionals and encouraging original thought and creativity. Over the past year Wang has grown considerably in size, due primarily to their marketing success which necessitates the need to recruit experienced professionals ... PUT YOURSELF AMONGST THE SUPERSTARS.

SALES EXECUTIVES: LONDON/HOME COUNTIES

NATIONAL ACCOUNT EXECUTIVE On quota c£20K + car

OEM SALES EXECUTIVE On quota c£18K + car

SALES EXECUTIVES On quota c£17K + car

Reorganisation in the marketing and sales force has identified a need to recruit key personnel, where experience, proven success and commitment will be well rewarded by exceptionally high earnings. These positions will require knowledge and experience of selling mini computer and/or word processing systems, and where applicants can demonstrate the ability to sell with a proven track record.

The National Account and OEM Sales Executive positions will require applicants with the appropriate skills in the respective areas. In both instances applicants should have previously negotiated with Chief Executives and senior management and ideally be used to UK responsibility in the assigned areas.

Contact: Cathy Tracey on: 021-236 3781 (24 hour answering service).

TELECOMMUNICATIONS SPECIALIST RICHMOND BASED

c£10,000 + car

A key and vital position within the UK support group is that of Telecommunications Specialist, it will require you to have detailed understanding of IBM systems software and telecommunications - which could include 3270 protocol, TP monitors, SDLC and TSO. Your function will be providing advice on the communications associated with the 2200, VS and word processing range of products. You should have an ASSEMBLER level language capability coupled with extensive communications and software experience.

Contact: Janice Plummer on: 01-935 0671 (24 hour answering service).

APPLICATIONS ANALYST RICHMOND BASED

c£8,000 + car

As a member of the UK systems support group your primary responsibility will be that of evaluating application packages and liaising between third party software vendors and the Wang customer base. Basic job functions will include technical appraisal, support, software training and the distribution of information to the marketing team.

This is a key national role within Wang and will require you to have extensive business experience and an in-depth knowledge of application software, ideally gained in an IBM environment. The successful applicant would have leadership skills and be fluent in COBOL.

Contact: James Plummer on: 01-935 0671 (24 hour answering service).

FIELD SERVICE ENGINEERS c£5,500 + car + overtime BASED NW1

TO £8,000 + car

We have been asked to identify experienced Field Service Engineers or candidates who have previous experience in the communications industry and a preparedness to undertake comprehensive training. Yours will be the responsibility to support either the 2200 VS range of equipment or the word processing systems, where you will have a minimum of six months experience of mainframe, mini or word processing equipment maintenance and knowledge of the associated peripheral devices to board level repair.

In both instances you should be capable of logical thought, be self motivated and prepared to take responsibility for the service and support at a client base in a geographical zone. Your responsibility will span installation, fault diagnosis and repair/replace to component level.

Contact: Valerie Hall on: 01-935 0671 (24 hour answering service).



London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
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A software background with a mini manufacturer would be ideal, although large mainframe and teleprocessing knowledge would be entirely acceptable. You will be dealing with customers and discussing with them their software problems. There will be considerable technical content to this position and you will be expected to handle all new software releases. Initial training will take place at the manufacturer's U.K. premises and will involve both formal lectures and practical experience in one of their

Kuwait is a very sophisticated Middle Eastern country where English is widely spoken. There is tremendous emphasis on outdoor leisure activities and community life, hence we would prefer married candidates. Salary will be tax free and there will be provisions made for accommodation, trips home, education of children etc, but these will be negotiable dependent on the individual requirements of the person concerned. Our client would like to make sure that the association is a long and happy one and they are therefore prepared to pay for you to make a trip out to Kuwait before you make a final decision. Please contact Caroline Bagley immediately for further details.



- working on a wide variety of interesting projects using advanced software
- on a network spanning Europe, the USA linking over 25 DEC Systems
- for a company which is part of the largest bureau operation in the world

We are one of the few remote computing service bureaux who offer a professional implementation service.

Our Systems and Programming Department provides this service to clients in the UK and Europe - producing tailor-made systems using a combination of programme packages and standard languages applied to business orientated applications.

The person we are looking for will manage our Midlands group based in Birmingham office.

He/She must have gone through a programmer-analyst/programmer-leader-systems consultant career progression, and must have significant experience in the management and costing of large system implementations together with involvement with a SALES FORCE in a pre-sales/proposal environment.

The MANAGER of this group will enjoy an income package which measures up to the responsibility and authority of this position.

A company CAR is provided plus BUPA plus EXPENSES plus PENSION SCHEME.

If you have a background which is relevant to our needs then contact BERNARD EDWARDS or PETER PEARCE on 01-637 1356, or write to:

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is one of the largest scientific information services in the world, adding 230,000 items each year to its database.

We wish to recruit a

PROGRAMMER with 2 years' experience, who is also **SCIENTIST** interested or experienced in **INFORMATION WORK** to assist with the development of a new system to meet the challenges of the 1980's.

Remuneration about £8,000 to £9,000 per year.
Further details from Prof. G. A. Somerfield, Excerpta Medica B.V., P.O. Box 1126, 1000 BC Amsterdam — The Netherlands.

ELSEVIER SCIENCE DIVISION

Software Engineering Specialists

STRETCH

yourself on the Dorset Coast

£6½-8½k

Chief Software Engineer

Responsibility for total project management, system design and customer liaison.

Group and Project Leaders
for systems design, customer liaison and to lead programming teams.

Systems Designers/Programmers
to specify, code and test interesting real-time programmes.
FOR THE FACTS AND TO ARRANGE AN INFORMAL DISCUSSION RING (020 13) 5161 Ext. 2028, REVERSE CHARGES.

Alternatively, write with brief details including present salary, to J. G. Griffiths, Plessey Controls Limited, Sopers Lane, Poole, Dorset BH17 7ER.



Stretch yourself and advance your career with one of our systems design and software teams involved on major new contracts.

Current projects include circuit-switching and packet-switching, data communication schemes and wide-area urban traffic control systems.

You will be engaged on complex multi-processor, real-time software applications and utilise such minicomputers as the DEC PDP11.

The appointments call for a real-time systems design/programming background. A knowledge of Assembler, Coral 66 or similar would be a distinct advantage.

Not only will the work stretch your ability, it will also lead to rapid salary and career advancement if you can demonstrate the necessary qualities. There's a comprehensive relocation package to this attractive part of the Dorset coast.

If you're on the way up in Systems Development, we'd like to meet you half-way

As a large County Council we're deeply interested in computers and what they can do for us.

That's why we maintain a 45-strong Systems Development Section within the Computer Division of the County Treasurer's Department.

The Section is involved with a wide range of work for the Council including Police (110), nine District Councils and the Area Health Authority. Equipment includes an IBM 360/30 (361B) under QSS/SL, which also supports CMC, Recode and Sovereign and Prime 3000/350 mini. Programming aids include Quota and Tasmin.

Currently we're looking for more men or women to join the team of ambitious people who are on the way up in software development.

And we'd like to meet them halfway, before natural flexibility of mind becomes hardened by routine.

Right now we need:

DEVELOPMENT STAFF

£3732 - £6060 (plus award pending from 1 July 1979)

These posts carry titles Senior Programmer or Systems Analyst/Programmer according to position on the salary scale, which allows progression (e.g. from £7.42 to £12.45 to £17.71 to £23.22 to £27.27 in successive years according to merit). Salary on appointment will be dependent on experience.

You should have at least one year's experience of IBM equipment, plus a knowledge of PL/I or Assembler.

We are based in the attractive old town of Matlock, which is within easy reach of Nottingham, Derby and Sheffield. A scheme exists for payment of lodgings and removal allowances to householders.

For an application form, please write to the County Treasurer, PO Box 2, County Offices, Matlock, Derbyshire DE4 3AG. Alternatively, telephone P.C. Widdison on Matlock (0629) 3411, extension 7760.



Where can Systems Analysts get the most out of the system?

Only in a company that's growing faster than its competitors.

Only in a company with a 'software first' design philosophy.

Only in a company far-sighted enough to realise that compatibility is the key to the future.

Only at Prime.

Prime Computer designs, manufactures and markets a broad range of powerful, cost effective computer systems with compatible architecture and using the same software. These systems have

established new price/performance standards for inter-active multi-user applications. Software developed on central sites can be distributed to run on smaller systems at remote sites. Moreover, by utilising our powerful network capability, distributed processing is a reality.

You will be working in field or central systems support teams. The field positions encompass all areas of pre-sales, installation and post-sales systems support, whereas the central system support positions are ones of greater specialisation.

You will have had several years' experience in the industry, be fluent in at least one major language and have a solid background in your discipline.

The rewards for working on your own initiative are high with Prime. So come looking for a competitive salary — all you have to do is prove you're worth it and we'll pay it! The benefits include a company car, BUPA, a pension scheme and a successful stock purchase plan.

For full details, please contact Patrick de Peyster, Marketing Support Manager, on 01-572 6241 or send him your brief career details in utmost confidence to:

c/o Employee Relations,
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The Hounslow Centre,
11 Lampton Road,
Hounslow, Middlesex.

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AGENCY

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LEEDS

Senior Analysts

These are senior positions, suitable for a generally broad commercial background. Some experience of manufacturing and production control systems. Self starters only please (Ref DR 1).

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A number of leading ICL users in the Leeds area have vacancies for experienced analysts. Industries and applications vary widely. Salaries also reflect experience (Ref DR 2).

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Challenging environment offers first class promotion prospects together with every opportunity to widen experience. Some systems analysis also BASIC and ideally a knowledge of PDP11 hardware and software. (Ref DR 3).

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Experienced COBOL programmers are required by a number of organisations. Particularly suitable for vacancies in Leeds within ICL installations involving PL/I and COBOL. All levels of experience required. (Ref DR 4).

Programmers

Very interesting vacancies for experienced programmers. Ideally knowledge of PDP11 hardware and OSRS, RPS and RSX11. High level languages preferred and BASIC a particular advantage. (Ref DR 5).

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Excellent opportunities in IBM installations. Applications cover finance, stock control, manufacturing and general administrative systems. Whilst some experience is essential talk to us. (Ref DR 6).

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COBOL programmers with from 1 years experience are required throughout this area. Previous IBM experience useful particularly including knowledge of OSRS and CICS. (Ref DR 7).

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Programmers

A major ICL installation in Bradford has immediate and permanent vacancies. 1 years experience in PL/I, COBOL, assembly language and COBOL required. (Ref DR 8).

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A well known company with an excellent track record wishes to recruit additional systems analysts. IBM hardware and manual systems experience essential (Ref DR 9).

MANCHESTER

Senior Analysts

There are outstanding opportunities for good systems analysts to really make their mark in a dynamic environment. Good systems and programming background and general knowledge of applications (Ref DR 10).

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Interesting vacancies for programmers at all levels of experience. Languages required are: PL/I, COBOL, BASIC. Most mainframes and a number of mini's. (Ref DR 11).

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Analyst/Programmers

If you're looking for PDP11 installations HSX11 an advantage. (Ref DR 12).

GLASGOW

Programmers

Programmers required for interesting applications including mini's. Languages should include COBOL and there is also scope for programmers with ASSEMBLER and BASIC. (Ref DR 13).

DUBLIN

Analyst/Programmers

Variety chance to work in a stimulating organisation using mini's. BASIC is a requirement and some previous experience of analysis work an advantage. (Ref DR 14).

Interested? Send coupon to: Prime Cathy Scott

NAME _____ AGE _____

ADDRESS _____

PHONE: HOME _____ BUSINESS (will be used discreetly) _____

YRS ANALYSIS _____ YRS PROGRAMMING _____

MACHINES USED _____

LANGUAGES USED _____

SALARY: _____

SALARY REQUIRED: _____

JOB SOUGHT: _____

REF No: _____

AGENCY

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MYRIAD PROGRAMMER. SMALL TEAM ENVIRONMENT

N.W. LONDON
(NEAR M1) £4750-£5500

Our client, one of the UK subsidiaries of a large American conglomerate, has recently installed an ICL 2903 and now require an experienced programmer to assist in the implementation of a complete range of new systems.

As with most successful organisations, extensive dependence is put on the speed and accuracy of information made available to support company policies and decisions.

The successful applicant, with at least EIGHTEEN MONTHS' COBOL programming experience gained in a commercial environment, will work closely in a small and friendly installation where being a member of a small team will give you the opportunity of gaining total system involvement and the possibility of gradually exercising your own analytical potential.

This is an excellent opportunity for a person to consolidate their programming skills in a professional environment and is supported by the offer of a realistic salary and attractive company benefits.

Ref. N2/1207

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

Professional DP Training Sales Consultant

London

Remuneration to £9,500 plus car

BIS Applied Systems Limited is a member of the Business Intelligence Services Group which employs over 200 staff in data processing and has a turnover approaching £7m. A leading DP consultancy, BIS Applied Systems is known throughout the UK and overseas for providing practical training to DP management, their staff and their users.

Responsible to the Manager of Training Sales, the consultant will sell and support the company's training services through direct contact with DP management and training staff. The role involves identifying training needs and developing career structured training programmes with client companies.

Sales experience, preferably within the DP services industry, together with good communication skills and a readiness to learn are all important requisites for a role with excellent prospects for wider responsibilities in a successful growing company.

The importance of the post is reflected in a remuneration package including salary, car and company benefits scheme.

Please write or telephone for more details and a Personal History form to Stephen Helms or Derek Potts, Training Division, quoting reference G740, at the address below. Applications are invited from either men or women.

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-633 0866

BIS
Applied
Systems



SENIOR PROGRAMMER

We are an engineering company committed to a programme of forward planning and development. In preparation for the installation, in early 1980, of a new Univac 90/25 with 3 x 8416 disc drives and V.D.U.'s which will replace our Univac 9300 we wish to appoint a Senior Programmer with a minimum of three years' commercial programming experience in ASSEMBLER (Univac or IBM) and/or COBOL.

Familiarity with on-line programming techniques would be advantageous but is not essential.

If you're the type of person who enjoys improving and up-dating systems, capable of working without supervision you can expect to assume full responsibility for the development and maintenance of our computer systems very quickly.

Interested? Then write in confidence to our Personnel Director, or if you prefer, telephone our Personnel Department on Walsall 26681.

Barton Conduits Limited,
Old Birchills, Off Green Lane,
Walsall, West Midlands.

BARTON

EDINBURGH REGIONAL COMPUTING CENTRE COMPUTING OFFICERS

The Centre has two vacancies (one part-time) in its Advisory Service for Assistant Computing Officers or Computing Officers.

Currently the main computing services offered in users in Edinburgh University and the Research Council Institutes in Edinburgh are based on the Edinburgh Multi-Access system which runs on twin ICL 4750s. ICL 2970 installations, an ICL 2980 (which also provides a service to the Strathclyde Universities) at present runs under VME/8 but will change to ECLP in the coming year. In addition, JIF Access is offered to IBM GS/MVS/MVS services at Newcastle and Cambridge, and to CDC 7600 facilities in Manchester.

The Advisory Service is a focal point within the Centre where users can raise queries regarding use of these and other facilities. All successful applicants will join the team of advisers (for initial training as part of their duties). The full-time post will also involve a substantial assignment in one of a number of areas such as support to the Computer Science department, support to some of the Centre's town system software or consultation on selected applications packages. The part-time post (hours to be agreed by negotiation) will also involve a limited amount of office work besides advising.

Applications are invited from graduates with some computing experience either during or since their degree course. Depending on the nature and relevance of these experiences, appointment would be on the Assistant Computing Officer grade (£4373-£5211) or Computing Officer grade (£4733-£7521) effective October 1979. Particulars in the DSS pension scheme is required. For an application form and further details contact (quoting reference 7018) The Secretary, University of Edinburgh, Old College, South Bridge, Edinburgh EH8 8YH, to whom completed applications should be returned by 31st July 1979.

LEEDS CITY COUNCIL DEPARTMENT OF ADMINISTRATION COMPUTER SERVICES DIVISION

The Council currently operates a large ICL 1904S with a variety of computer terminals (including mini-computers) and a wide range of system applications running under the GEORGE 3 operating system. Consideration is being given to the replacement of the ICL 1904S and evaluation of alternative equipment is in hand. The following vacancies exist in the Development Branch:

SOFTWARE ANALYST PROGRAMMER

£812 - £9232 to £6000 p.a. (inclusive)
(pay award pending)

Applicants should have at least three years' COBOL and/or PLAN 3, and preferably knowledge of ICL utilities. Communications or programming staff supervision and training is also desirable.

SOFTWARE PROGRAMMER

T1/5 - up to £5073 p.a. (inclusive)
(pay award pending)

Applicants should have two years' experience of COBOL, PLAN 3, GEORGE 3 and/or Communications Manager.

Applications in writing to: Personnel Officer, Department of Administration, Room 308, Civic Hall, Leeds LS1 1UR.

CLOSING DATE: 14 days after appearance of advert.



Police Headquarters, Lewes

SYSTEMS ANALYST

New venture... challenging opportunity
Salary in the scale rising to £5,568 p.a.
(pay award pending).

You will be working alongside police officers part of a project team formed to investigate computer applications to support operational policing.

This is an unusual opportunity to come on the ground floor of an entirely new venture; you will be expected to make a full contribution in the field of statistical models and interpretation and application of data to the requirements of the systems.

Relocation scheme plus other usual Government benefits. In addition you will be offered excellent staff restaurant facilities.

For further details and application form please contact Personnel Officer, Police Headquarters, Malling House, Lewes, East Sussex. Tel. 5432, ext. 308.

SOUTH WEST UNIVERSITIES REGIONAL COMPUTER CENTRE University of Bristol

ICL 2980

The Regional Centre is a leading 2980 site. We operate a large 2980 system under VME/8 and provide computer services to Universities in the South West over state-of-the-art communications facilities. Following an internal personnel review, applications are invited for the post of:

SHIFT SUPERVISOR

Applicants must have relevant experience in a large computer environment (2980 experience not essential). Important attributes are initiative, enthusiasm and a professional approach to operating.

Salary (inclusive of three shift allowance)

£4500-£5370 (under review)

Application form and further particulars (quoting ref. 792/BSR/CW) from Personnel Officer, University of Bristol, Claverton Down, Bath BA2 7AY. Closing date 27/7/79.

1900 COBOL S. LONDON

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Development work in
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There are a few openings for T.P. people as technically challenging or as technically advanced as this.

You will be working for a World Leader, a respected major Corporation at the forefront of electronics and communications technologies.

Among your responsibilities will be as the last line of support for certain products, thus you will be respected as the leading authority throughout Europe when troubleshooting systems.

In addition, you will be a key member of a team developing an IBM Compatible Comms. Controller which will be used in an X25 Protocol, Packet Switching environment.

Your communications experience will have encompassed BTAM, VTAM, a TP Monitor such as CICS or SHADOW and the 3270 Series both Local and Remote.

Experience gained on more complex software such as SNA, SDLC or IMS/DC will also be extremely relevant.

If you are a Teleprocessing professional and want to be recognised as such, this is your opportunity.

Please call me, GEOFF MARSH, on 01-499 4501 to arrange an early meeting.

REF RW 28/3

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Move up to Customer Support in the
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Are you a FORTRAN Programmer? Have you had enough of pay restrictions, career restrictions and poor management?

All of this can be changed; careers can be achieved in:

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Salary is dependent only on ability; projects are mostly development with a range from small custom-built enhancements right through to multi-man year systems.

Program development is via terminals, and in-house training facilities are first-class. So if you want a chance at a real career give me a call now.

GEOFF MARSH on 01-499 4501

REF. 28/2

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NCR Dundee is rapidly becoming established as an important centre of original software development for NCR worldwide. Current projects include a block-structured language compiler and control software for specialized self-service terminals. Others are planned, and there is a continuing dialogue between Dundee and other NCR development centres around the world.

There are several vacancies, all brought about by new product development. For graduates with up to 5 years' experience, salaries are very competitive (i.e. to £7000) and are currently under review. Conditions of employment generally are excellent and a generous relocation package is offered where appropriate.

If you feel that there might be something in all this for you, then give me, Tony Baker, a call on 01-499 4501, or write to me at the address below, quoting reference RW 28/1.

hutchinson-scoggins recruitment

47/48 New Bond Street (entrance in Maddox Street)

London W1Y OHE Telephone 01-499 4501

MYRIAD**SYSTEMS
CO-ORDINATOR****NR. BRENT CROSS****c £7500**

An extremely challenging opportunity has arisen within our client's organisation for an experienced professional to co-ordinate the development of a major on-line application.

This is an ideal opportunity for a self-motivated and mature person to interpret the requirements of user departments and relate these in system design, specifications and programming.

The company are one of the leading manufacturers and suppliers of medical life support systems and are an extremely successful division of one of the largest public companies within the UK. They have recently ordered an IBM System 34, due for delivery in March, 1980, with the intention of utilising the IBM MAPICS packages to interface in the development of an on-line order processing system and management information reporting.

Ideally applicants should be able to offer a minimum three years' data processing experience where they have developed commercial/financial systems using RPG II and have progressed in systems analysis. It is envisaged that the successful candidate will assume project leading responsibilities and contribute in the initial planning stages of future systems.

Working in a very pleasant office environment, a full range of company benefits support this challenging position.

Ref. N3/1207

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

GREATER MANCHESTER COUNCIL
COUNTY ENGINEER'S DEPARTMENT

**COMPUTER
OPERATOR/PROGRAMMER**
£1821/E4832 p.a. Inclusive

Involved in the operation of a large PRIME 400 computer installation and to develop computer programs for the various applications areas within the department.

The installation consists of a 640K byte PRIME 400 Computer with three 16 bit horizontal disc drives, two magnetic tape units, line printer and line fed printer. Users have access to the computer via VDU's located in the design offices.

Preference will be given to applicants possessing experience in both computer operations and FORTRAN programming, although training will be available for less experienced staff.

Applications by letter giving all relevant details including age, qualifications, experience and two referees to the County Personnel Officer, County Hall, Manchester M60 3HP by 25th July if possible. Please include a telephone number where you may be contacted.

**WESTFIELD COLLEGE
(University of London)**
**CASE Studentship
with INMOS in
MICROPROCESSOR
DESIGN**

Applications are invited from those who expect shortly to have a good honours degree in Computer Science or a related subject. The successful applicant will be expected to register for a PhD. Work will divide his time between Westfield College and the Bristol Laboratories of INMOS.

The research goals are not merely to design a microprocessor, but also to develop relevant simulation techniques and the design-simulation cycle.

Applications should be sent to Peter O'Brien, Computer Science Department, Westfield College, Kew Green Avenue, Kew, Middlesex, London, W3 (01-967 7141).

**Deputy Supervisor
-Software**

Switzerland

An important International bank is urgently seeking a capable systems man for its newly-installed centralised computer system. Based in Switzerland, he will be deputy to the software Supervisor and be responsible for software systems in connection with the 370/148 VM centre, with VM370, DOS/VSE, CICS, RJE, Power and VTAM. The right man will have had at least four years' systems programming experience, one year of which should

have been in the capacity of senior or deputy. A good knowledge of on-line systems, JCL and work control procedures, as well as an excellent insight into software applications is essential. With English as his mother tongue, he should also have a working knowledge of German. This is a responsible position with career prospects, and salary and other conditions are excellent. Please write, in strict confidence sending a Curriculum Vitae to:

PA Management Consultants AG,
Kreuzstrasse 26, 1100 Zurich, Switzerland. Tel: Zurich 34 69 36.



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At Marconi Avionics we provide training in design techniques and CORAL. At plants in Borehamwood, Welwyn Garden City and Radlett, all in Hertfordshire, we are writing software for TEXAS, MOTOROLA and INTERSIL microprocessors and we need programmers and engineers for several small projects.

So if you are a graduate with two years' programming or hardware experience and are interested in working

**MARCONI
AVIONICS**
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THE HATFIELD
POLYTECHNIC

**Computer
Operator**
Ref. 248

**Senior
Computer
Operator**
Ref. 249

We have recently installed three new multi-access computer systems to support over 200 simultaneous terminals and have two vacancies in our operations team which works on a three-shift basis. Although preference will be given to candidates with experience of DEC equipment for the senior post, the essential requirement for both posts is a sound background in computer operations.

The computers (a DEC 10/91, DEC 20/20 and PDP 11/70) will be housed in a new building which has excellent staff facilities.

Salary: Senior Operator £4442-E4927 (bar) — Operator: £3379-E3912 (bar) — £4347 (Clerical 1, AP1/2) inclusive of shift and other allowances.

Trainees may be appointed at a lower salary rate.

For further details and an informal discussion ring Gordon Brand on Hatfield 68100 Ext. 472, or write to the Staffing Officer, The Hatfield Polytechnic, P.O. Box 109, Hatfield, Herts, AL10 9AB.

Closing date for applications: 27.7.79.

Please write or telephone Mr. J. G. Hurton,

ANALYST/PROGRAMMER

Stone & Webster Engineering Ltd. are part of a multi-million pound engineering group supplying engineering expertise mainly to the petrochemical and process industries. We are situated in new offices in the Gray's Inn Road.

We have a HARRIS 1255 computer with 500k byte MOS Memory under VULCAN 8 virtual operating system for batch and timesharing processing. We are looking for an analyst/programmer to join our commercial development team who are designing and writing an integrated corporate accounting system using direct data entry and interactive processing. Program development is in timesharing mode using ANSI 74 COBOL.

Applicants should have at least 3 years' analyst/programmer experience in COBOL. Experience with database management, transaction processing systems and data entry would be an advantage particularly titles in the areas of financial accounting, project planning and control management information systems.

The salary offered is very attractive and fringe benefits include 4 weeks' vacation, LVS, pension scheme, service bonus, etc.

Please write or telephone Mr. J. G. Hurton,

**STONE & WEBSTER ENGINEERING LIMITED,
STONE & WEBSTER HOUSE,
236 GRAY'S INN ROAD, LONDON WC1X 8HA.
TELEPHONE: 01-837 2855 EXT. 3709.**

STONE & WEBSTER**OPERATIONS MANAGEMENT
£6500**

Whitbread London are installing a Computer Centre in their new Luton offices, based on a Honeywell 64/30 mainframe, four 725 minis and a Ventek datapoint. They now need a **Computer Centre Production Manager** to run the new operation efficiently, manage the Centre staff and provide an effective batch and real-time service to the Company.

If you are currently working in a fairly senior capacity in operations (e.g. in a supervisory or managerial position), this new vacancy could represent an exceptional career move with excellent future prospects within the Group. In addition to the salary above, the Company offers substantial benefits, including assistance with relocation if necessary.

For more details about this job or the Company, please telephone Sharold Landau at SBS on 01-734 0562 (24hr), or write with a brief C.V. to the address below:

SBS RECRUITMENT
SCIENTIFIC & BUSINESS SYSTEMS LTD
29-31 OXFORD STREET, LONDON W1R 1HL

Senior Analysts & Programmers

North West, c. £7,500

A leading electrical engineering company, part of a major British group, seeks additional Senior Analysts and Programmers as part of its planned Data Processing expansion. These plans include the installation of new equipment and the development of real-time systems. Specific areas for development

are Order Processing, Production and Inventory Control and Management Accounting. Duties will also include the improvement of existing computer systems. Applicants will have had experience of developing computer systems in the areas specified and should preferably have managed a small project team.

C.G. Moores, Ref: 24189/CW Senior Analysts, Ref: 24190/CW Senior Programmers

These positions are open to male or female candidates. Please telephone in confidence for a Personal History Form to:-

MANCHESTER: 061-236 8981, Sun Life House, 3 Charlotte Street, M1 4HB.

Hoggett Bowers
Executive Selection Consultants
BIRMINGHAM, CARDIFF, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE and SHEFFIELD.

PROGRAMMER

We have a major development programme which involves

- * the implementation of a large branch terminal network using IBM 3600 equipment.
- * the implementation of a database system
- * the extension of local TP using 3270's

We need to enhance our existing team to ensure the success of this demanding programming and are thus able to offer a Programmer an exciting opportunity to extend his/her experience.

Applicants should have a minimum of two years' experience using PL/I or Assembler. Preference will be given to applicants with experience using DL/1 database system or 3600 financial terminal equipment.

This appointment will be based in our Head Office in Bristol. A realistic salary, which is reviewed annually, will be offered, and there are attractive fringe benefits, which include a contributory Pension and Life Assurance scheme, assisted membership of BUPA/WPA and staff house purchase facilities.

Please write in the first instance with brief details of your age, qualifications and previous experience to The Personnel Manager, Bristol & West Building Society, P.O. Box 27, Broad Quay, Bristol BS9 7AX.

**Bristol & West
BUILDING SOCIETY**
A MEMBER OF THE BUILDING SOCIETIES ASSOCIATION

**European Organization for
Nuclear Research**
Organisation Européenne pour la
Recherche Nucléaire

CERN, a European Research Laboratory situated near Geneva, has a vacancy for a

**COMPUTER CONSOLE
OPERATOR**

in its central computer service. This is at present based upon CDC 7600, 6400, 6400 computers as well as IBM 370/168 and 3032 systems.

The post involves a shift work including weekends and public holidays.

Candidates should have successfully completed their education to at least GCE 'A' level or equivalent, preferably including computer science or other scientific subjects. At least two years' experience of computer operation including some IBM experience is desirable. A knowledge of French would be useful.

For application forms, please write to
Head of Personnel, CERN, 1211 Geneva 23, Switzerland
quoting the reference DD-CO-79/1

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**SUNDERLAND POLYTECHNIC
FACULTY OF ENGINEERING
DEPARTMENT OF ELECTRICAL, ELECTRONIC & CONTROL ENGINEERING
RESEARCH ASSISTANT**

Applications are invited from recent graduates, students or graduates for work as part of a Research Assistant to work in the field of parallel processing with microprocessors. Prospective candidates should hold or expect to obtain a good honours degree in any of the following disciplines: Electrical, Control Engineering, Computer Engineering and Mathematics.

Candidates will be expected to register for a higher degree, M.Phil. or Ph.D. Telephone enquires can be made to K. M. Abbott, Tel: 01-76191. Ext. 18. Salary for this post will be £2,778 per annum from 1st September, 1979, with a possible extension up to three years, to £3,054 per annum (under review). An application form may be obtained from the Personnel Officer, Sunderland Polytechnic, Queen's Road, Sunderland, SR1 3SD. Applications should be returned as soon as possible.

To learn more about these first-class career openings, ring us in confidence, quoting ref. 672CW or leave a message on our answering machine and we'll contact you.

For more details about this job or the Company, please telephone Sharold Landau at SBS on 01-734 0562 (24hr), or write with a brief C.V. to the address below:

SBS RECRUITMENT
SCIENTIFIC & BUSINESS SYSTEMS LTD
29-31 OXFORD STREET, LONDON W1R 1HL

Telephone 01-637 5796 (24 hours)

**So you know
all about
Systems
Software****How about
Computer
Systems
to Design
Systems
Software?**

The brief for this job is to assist in the design and implementation of a methodology for the controlled evolution and maintenance of systems software.

The hardware centres on a major family of mainframe computers together with new systems currently under development.

The location—Southern Germany.

We are looking for—

Systems Designers

With at least three years relevant experience to work on the development of technical procedures for a system of computer aided design to be used on operating systems software.

Senior Programmers

With several years' experience of programming as part of a major project team. The job will be of particular interest to programmers with an interest in the development of systems software.

The main qualifications we require are experience and innovative ability.

The company—an international organisation based in Germany with a first class record in the business world and a reputation for using the skills and talents of their people with imagination and with commonsense.

Background—the people we require will have extensive experience of at least two of these languages—PL/I, Cobol, Assembler, SPL.

To make a contribution to this project you will need a clear understanding of how systems software is developed at present and more to the point, how it should be developed in the future.

In return we can give you the satisfaction of working on the project which will produce the industry standard for systems software development in the '80s.

Extremely attractive salaries are being offered for these positions together with the usual benefits associated with a large international organisation.

The Country—Living in southern Germany can be a reward in itself. The cities offer an enjoyable way of life and the countryside is beautiful and unspoilt.

If you are interested in applying for a position working on this project please write in the first instance giving details of career to date and qualifications to—

Altmann & Partner GmbH

of either:

21, Mount Ephraim Rd., or Weissenportz,
Tunbridge Wells, Kent, 5203 Much, West Germany
0892-25702, 010-49-2245-2824

Interviews will be arranged in London

EDP SYSTEMS LTD
52-53 Margaret Street, London W1N 7FF
Telephone 01-637 5796 (24 hours)

NEW MALDEN

Our Client, a leading international firm of security printers, are shortly upgrading their computer equipment to an ICL 2904, and have vacancies for a Systems Analyst and a Programmer.

Systems Analyst

C. £7,000

This successful company are about to expand their existing management information system and require a systems analyst for the development work on this and future applications. Applicants should have at least 3 years' relevant experience preferably using ICL equipment and RPG II.

Both positions offer excellent fringe benefits which include 5 weeks' annual holiday, pension and life assurance schemes and an active sports and social club.

Ref: CW 28/1.

Please contact:

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DEC SYSTEMS ANALYST 2 YEARS — CYPRUS PERMANENT OR CONTRACT

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The individual selected will receive a salary payable in the U.K. or locally, in a country where the cost of living is extremely cheap.

In addition to this they will receive free accommodation and return air flights to the U.K. as well as being eligible for tax free concessions on purchases such as cars.

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We're RBL, the U.K. arm of Research International, the world's largest full service market research organisation. Our Business & Industrial Group, which is mainly involved in international research, needs an extra person with D.P. skills who would like the opportunity to develop, with training, into the more general executive area of Market Research.

The successful candidate will have not less than 2 years' experience of Market Research analysis specification, preferably, but not essentially, using the Quantum Package and familiarity with keyboard terminals and an on-line system are essential.

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